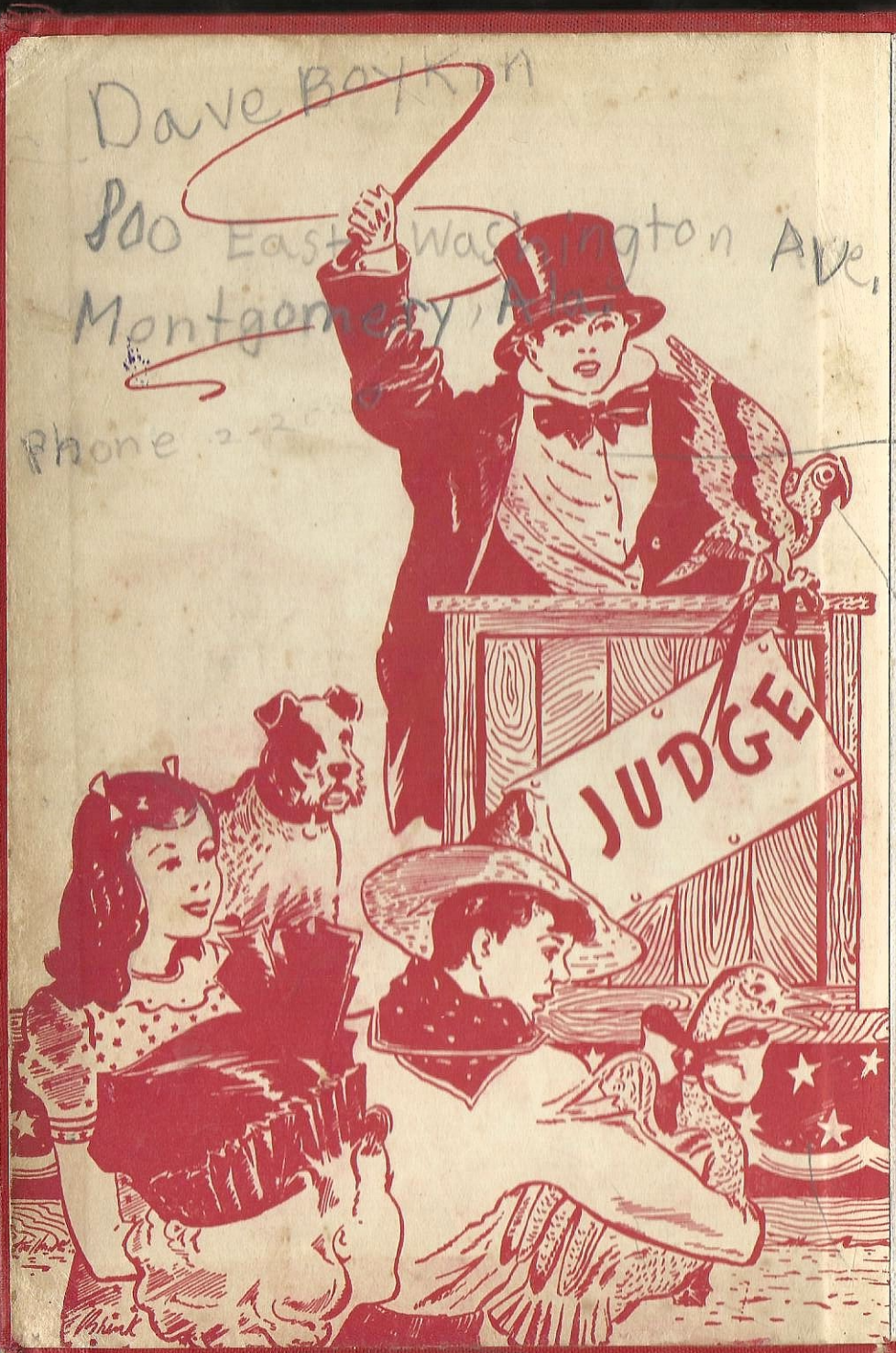
CHAMPION

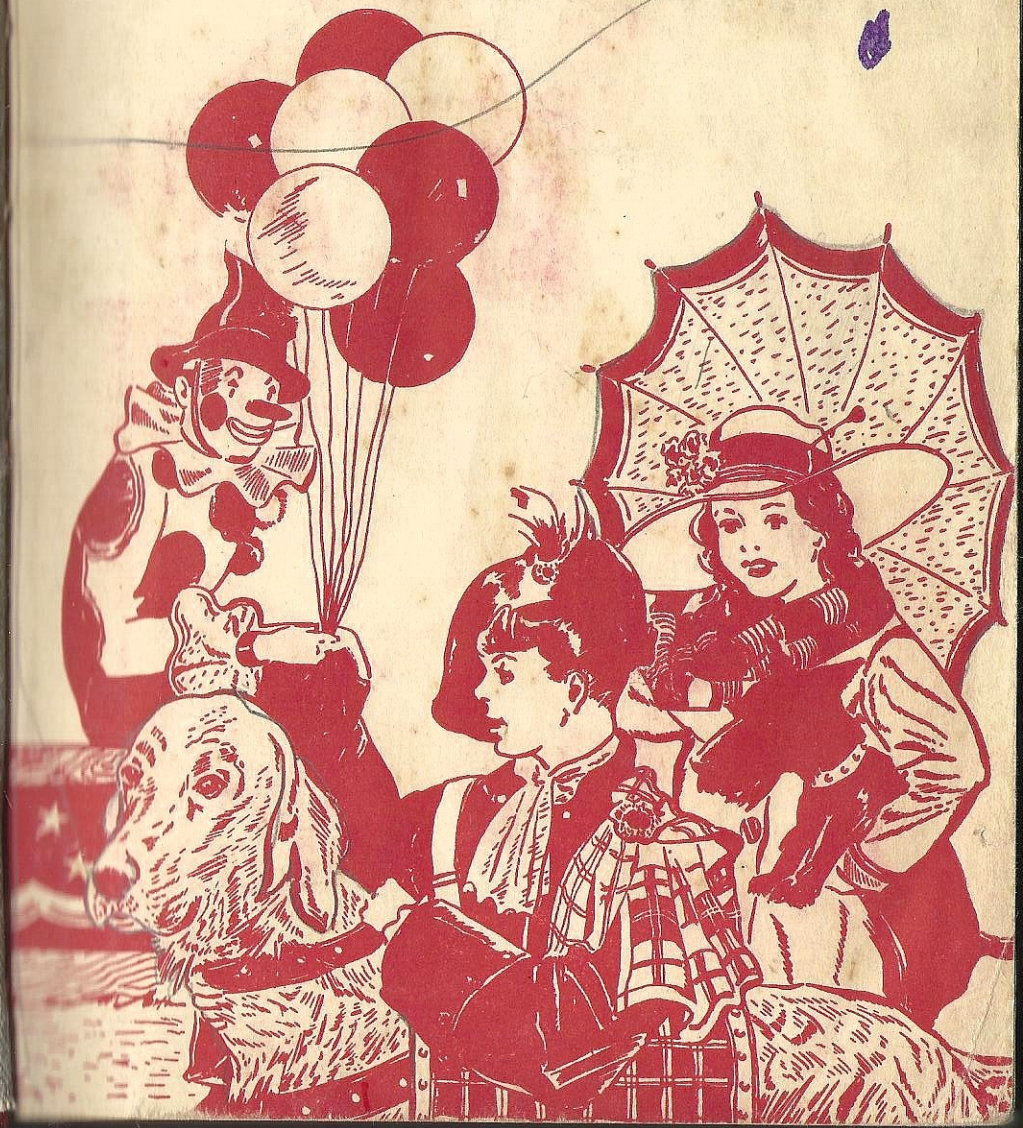
ARITHMETICS

STEPPED-UP EDITION

Dave Boykin
800 East Washington Ave.
Montgomery, Ala.
Phone 2-2



Dave Boykin
800 East Washington Ave.
Montgomery, Ala.
phone 2-202



1. Divide first number.
2. Multiply divisor by quotient
3. Subtract that you get from first number
4. Repeat same 3 steps for each of other numbers.

Dave Boykin
300

CHAMPION ARITHMETICS

STEPPED-UP EDITION

GRADE THREE

JOSEPH C. BROWN
Superintendent of Schools, Pelham, N. Y.

HELEN COOK MIRICK
Arithmetic Methods, N. Y. Training College for Teachers

J. FREEMAN GUY
First Associate Superintendent of Schools, Pittsburgh, Pa.

ALBERT C. ELDREDGE
Late Principal, James Ford Rhodes School, Cleveland, Ohio

Illustrations by
NELL HUKLE COMPTON

ROW, PETERSON AND COMPANY
EVANSTON, ILLINOIS
NEW YORK CITY SAN FRANCISCO

COPYRIGHT. 1937,
BY
ROW, PETERSON AND COMPANY

2886

MANUFACTURED IN THE UNITED STATES OF AMERICA

PREFACE

To meet present demands regarding grade placement we offer the CHAMPION ARITHMETICS, STEPPED-UP EDITION. The same outstanding qualities which have led to the enthusiastic adoption and successful use of the CHAMPION ARITHMETICS in thousands of school systems are retained in the STEPPED-UP EDITION.

The recommendations which have been followed by our authors for their regrading of topics in arithmetic are the outgrowth of recent educational trends and research studies in the teaching of this subject.

The major differences between Grade Three of the CHAMPION ARITHMETICS and this STEPPED-UP EDITION are as follows:

1. Number areas including the facts with products and dividends from 40 through 81 have been stepped-up to Grade Four.
2. Teaching of carrying in multiplication from ten's place and from both one's place and ten's place has been stepped-up to Grade Four.
3. All carrying in division has been postponed until Grade Four.
4. Teaching of remainders in division has been expanded and is presented in long division form.
5. Additional practice in the more difficult third-grade skills has been introduced to replace the skills stepped-up to Grade Four.

A full Table of Contents and an unusually complete Index will facilitate examination and use of this book.

The constant aims of the authors of the CHAMPION ARITHMETICS, STEPPED-UP EDITION have been (1) to make arithmetic easier and more interesting for all children; (2) to guide teachers in the best methods; (3) to provide ample material of the right kind; and (4) to meet the standards of sanely progressive superintendents, supervisors, and teachers.

THE PUBLISHERS

Acknowledgments

Grateful acknowledgment is made to the many superintendents, supervisors, and teachers who aided by conducting tests, and by trying out and criticizing parts of the manuscript.

Suggestion for Progress Tests

Many teachers will probably wish to ask that each pupil mark on his paper how far he has worked the progress test when time is called and then that he try to finish the test.

THE AUTHORS

Contents: Grade Three

CHAPTER I

Diagnostic Inventory Tests and Remedial Work

	PAGE
Number, Please	3
Counting	4
Counting and Writing Numbers	5
How Clocks Show Time	6
Telling Time	7
United States Money	8
Reading, Writing Dollars and Cents	9
Some Uses of Numbers	10
Choosing a Captain	11
To Find What Addition You Know	12, 13
Where to Find Help	13
What Addition Means	14
Study Chart 1 (+)	14
Silent-Helpers	15
How to Show *Not Any*	16
Study Chart 2 (+)	16
Number Stories	17
Study Chart 3 (+)	18
Studying Number Facts	19
A Food Sale	20
Months of the Year	21
Study Chart 4 (+)	22
A Picnic at the Lake	23
Study Chart 5 (+)	24
Interesting Number Stories	25
Circus Day	26
Measures	27
Practice, Problems	28
Adding 2-Figure Nos	29
Adding 3 Scores	30
Column Addition	31
Who Won Each Game	32
Number Stories	33
Adding 3 2-Fig. Nos	34, 35
Addition Tests	36, 37
To Find What Subtraction You Know	38, 39
Where to Find Help	39
How Many Are Left?	40
Study Chart 1 (−)	40
How Many More or Fewer?	41
Study Chart 2 (−)	41
Number Stories	42
Finding the Difference	43
Study Chart 3 (−)	43
Study Chart 4 (−)	44
Practice, Problems	45
Study Chart 5 (−)	46
A Candy Sale at School	47
Review	48, 49
2-Fig. Subtraction	50, 51
Subtraction Tests	52, 53
Canning Fruit	54
Jim's Birthday Party	55

CHAPTER I—Continued

	PAGE		PAGE
Today Is Bank Day	56	One-Fourth of a Whole	59
Keeping in Practice	57	Testing Your Progress	
One-Half of a Whole	58	+, −, Problems	60, 61

CHAPTER II

Carrying in Addition and Borrowing in Subtraction

	PAGE		PAGE
Jane's Doll House	62	Helping in the Toy Shop	95
Measuring	63, 64, 65	Problems and Practice	96
Practice (+, −)	66	How Tall Are You?	97
A Matching Game	67	A Number Game	98
Counting Votes	68	Problems and Practice	99, 100
Reading, Using Numbers	69	Spin the Wheel, Review	101
More About Numbers	70	Keeping Up Your Skill	102
Working Problems	71	Test and Practice (+)	103
Problems and Practice	72, 73	Interesting Problems	104
The Candy and Toy Shop	74	At the Grocery	105
The Lunch Room	75	3-Fig. Nos. (+)	106, 107
Families in Arithmetic	76, 77	Carrying from Tens'	108
Harder Column Addition	78	Practice (+, −)	109, 110
Higher Decade Facts (+)	79	Dollars, Cents (+)	111
Oral Problems, Practice	80	Do You Know Them?	112
Using Families (+)	81	Oral, Written (−)	113
Nancy's Chickens	82	Test and Practice (−)	114
Checking What You Know	83	3-Fig. Nos. (−)	115
Candy After Lunch	84	The School Fair	116
Learning About Thirds	85	Dollars, Cents (−)	117, 118
Carrying in Addition	86, 87, 88	Making Change	119
Helps in Addition	89	Borrowing in Subtraction	120
Dan's Vacation	90	A Page of Practice	121
Using Families	91	Making a Garden	122
Money in the Bank	92	Subtraction: 0 above	123, 124
Lions Race Tigers	93	Borrow from Hundreds	125
A School Party	94	Everyday Problems	126
		Shopping for Mother	127

CHAPTER II—Continued

	PAGE		PAGE
Borrow Tens, Hundreds	128	At the Bakery	132
Finding How Tall	129	Keeping Up Your Skill	133
Zero in Subtraction	130, 131	Testing Your Progress	134, 135

CHAPTER III

Multiplication and Division Facts

	PAGE		PAGE
Using Roman Numbers	136	Ones in Division	160
Measures	137	Multiplying Large Nos.	161
Buying Stamps	138	Review (×, ÷, ½)	162
The Meaning of *Times* and *Multiply*	139	Facts with 0 (×)	163
Multiplication Facts	140	Using 0 (×)	164
Working Problems	141	Multiplying a Whole Number by 10	165
Changing the Places of Numbers to Be Multiplied does not Change the Product	142	Tulip Time	166
Problems	143	Products to 20	167
Products to 10, except 1's and 0's	144	Oral Problems	168
Times or *Multiplied By*	145	A New Step (×)	169
Ted's Party	146, 147	An Auto Trip	170
Practice (+, −, ×)	148	3-Figure Nos. (×)	171
Problems	149, 150	Checking Up (× by 2)	172
A Day at the Fair	151	Test, Practice (× by 2)	173
Test, Practice (+, −)	152	Fun with Numbers	174
Problem Test	153	Dividends to 20, except 0's	175
What Divide Means	154	Improving by Practice	176
Division and Review	155	Review with Silent-Helpers	177
Dividends to 10, except 1's and 0's	156	A Flower Show	178
Multiplying Ones	157	A School Party	179
At the Fruit Store	158	Practice Tests (+, −)	180, 181
One-Half of a Number	159	Keeping in Practice	182
		The Grocery	183
		Dividing Larger Nos.	184
		Practice, Problems	185
		Two Uses of Zero	186

CHAPTER III—Continued

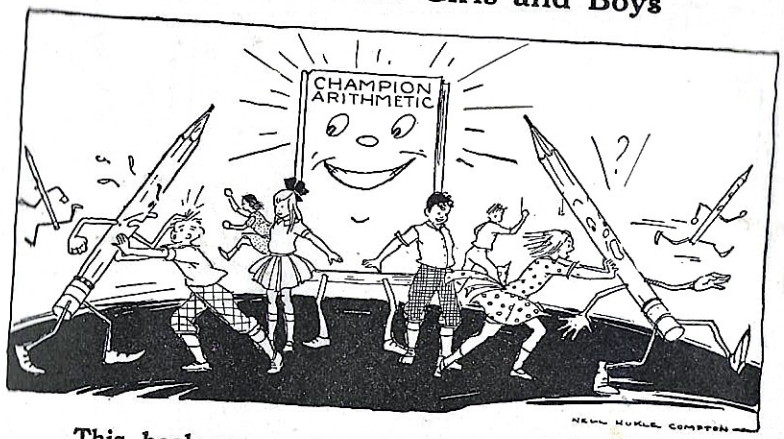
	PAGE		PAGE
Zero in Dividends	187, 188	Testing Your Progress	190
Checking Up (÷ by 2)	189	Problem Progress Test	191

CHAPTER IV

Longer Multiplication and More Difficult Division

	PAGE		PAGE
Children's Books	192	Pounds and Ounces	223
Another Step (÷)	193	Review	224, 225
Playing with Soldiers	194	Products to 40	226, 227
How to Carry (×)	195	Checking Up on Facts (×)	228
Dollars, Cents (×)	196	Dividends to 40	229
Practice (×)	197	A Play	230
Products to 30	198	Problems, Practice	231
A Roadside Stand	199	Dollars, Cents (÷)	232
A Candy Sale	200	Practice (+, −, ×, ÷)	233
Carrying 1 or More (×)	201, 202	Measuring Liquids	234, 235
Using Zeros (×)	203	Dry Measure	236
Everyday Problems	204	Practice (×, ÷)	237
Dividends to 30	205	Sales at Groceries	238
Nature Problems	206	¼ of a Number	239
One-Third of a Number	207	Test, Practice (×, ÷)	240
Problems	208	Using Measure	241
Test, Practice (×, ÷ by 3)	209, 210	Reading Numbers	242
Telling Time	211	Zeros (÷)	243, 244
Test, Practice (+, −)	212	Division Test	245
Checking What You Know	213	A Trip to the City	246, 247
A Wooden Zoo	214	Test, Practice (×, ÷ by 4)	248, 249
Doll Laundry	215	Testing Your Progress	250, 251
Something Left Over	216	Problem Progress Test	252
How Well Do You Remember?	217	The 100 Addition Facts	253
Families (−)	218	The 100 Subtraction Facts	254
Finding Remainders	219–222	Facts: Products to 40	255
		Facts: Dividends to 40	256

To Third-Grade Girls and Boys



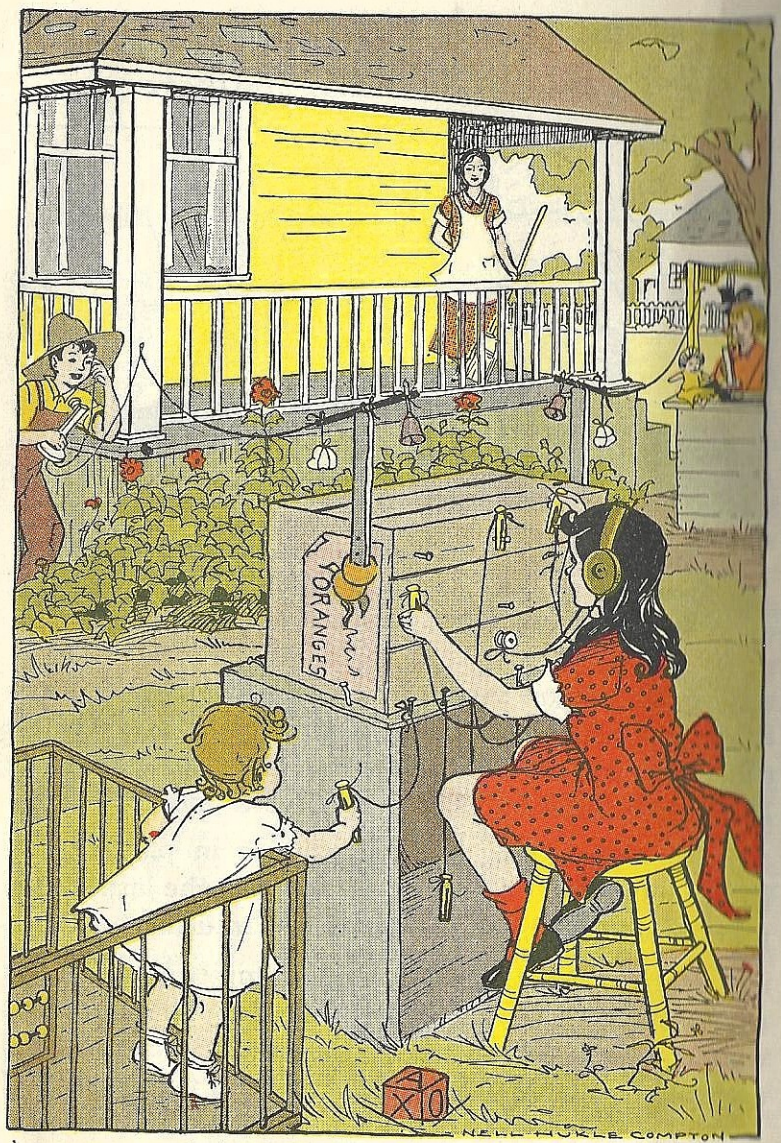
This book was made as it is because we know you like neat, clean, and beautiful things. There is no place where you should write on its pages.

The Champion Arithmetics, Stepped-Up Edition, show you with interesting pictures and stories how other girls and boys use numbers. They also show you how to use numbers in your own work and play.

Just as the right kind of practice in playing any game makes you a better player, so the arithmetic practice will make you more skillful in using numbers.

A star (*) before problems or examples in this book means that the work is a little harder. Girls and boys who have worked correctly the other problems and examples may try the starred work on that page.

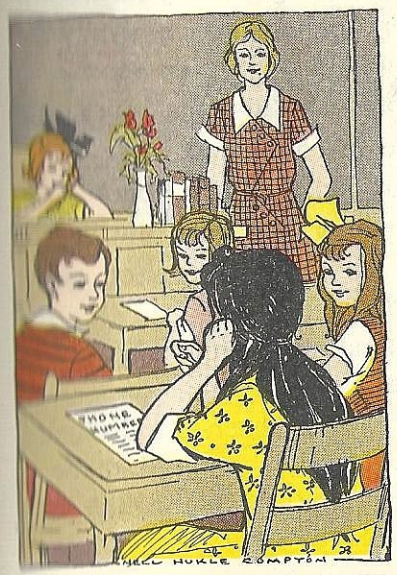
THE AUTHORS.



NUMBER, PLEASE.

CHAPTER I

Number, Please



Write your name and telephone number on a piece of paper. Write on it also the names and telephone numbers of several other children as they read them to you.

Choose a pupil to be the "operator" at the teacher's desk. Play that there is a telephone on each pupil's desk. When your teacher nods to you, rap on your desk to call the operator and take down the receiver.

Operator: Number, please.

You: (Give the number you wish to call in this way.) Lake, 2 9 0 8. (Say the letter o for zero.)

Operator: (Repeats) Lake, 2 9 0 8.

Pupil Called: This is Lake, 2 9 0 8,_____ _____ is speaking. (Pupil gives his or her name.)

You: This is_____ _____. (Give your name.) What is your post office address? Please give it to me so that I may send a present to you.

Counting

1. Count the number of children in your room.
2. Count the number of girls in your room.
3. Count the number of boys in your room.
4. Are there more boys than girls in your room?
5. If two children enter your room from another school, how many children would be in your room?
6. Count the number of desks in your room.
7. How many desks are in each row?
8. Count the number of girls in each row.
9. Count the number of boys in each row.
10. Which row has the largest number of girls? the smallest number of girls?
11. Which row has the smallest number of boys? the largest number of boys?
12. Perhaps your teacher will let each pupil choose a partner for a game. Then the partners will make a line by two's. Before the game starts, count the children by two's: 2, 4, 6, and so on.
13. How many children are in the line?
14. What is the number of this page of your arithmetic book? Read the number on another page.
15. Which number is larger, seven or nine? twenty or seventeen?
16. Which number is smaller, sixteen or eighteen? thirty-two or twenty-seven?
17. On your paper write the numbers below in the order of size, placing the smallest number first:

15, 9, 4, 12, 6, 7, 10, 2, 13

Counting and Writing Numbers

While playing hide-and-seek Jane counted, "Ten twenty, thirty," and so on to one hundred. Count by tens to 100, and write the numbers as you count.

Sometimes Billy counted by hundreds, "One hundred, two hundred," and so on to "ten hundred, or one thousand" (1000). Count as Billy did, and write the numbers.

On your paper, write five different numbers.

These are the numbers Tom wrote:

689 245 30 710 807

Did Tom use any other figures than the ten below?

0 1 2 3 4 5 6 7 8 9

What figures did you use in your numbers?

Tom's first number is read, six hundred eighty-nine.

His last number is read, eight hundred seven.

Try to read all of his numbers and your own.

Copy the numbers below, and go on to 100.

0 1 2 3 4 5 6 7 8 9

10 11 12 13 14 15 16 17 18 19

How Clocks Show Time

Read the numbers on each clock face above.

How many hands has each of these clocks?

Point to the short hand on each clock above.

The short hand is called the *hour hand*.

On each of the clock faces above, to what number is the long hand pointing?

The long hand is called the *minute hand*.

Which way do the hands on a clock move around?

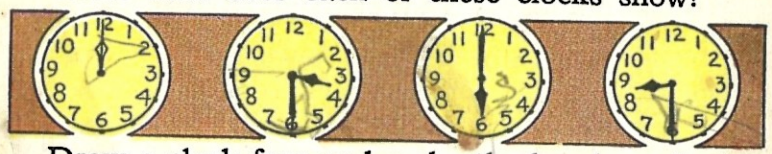
The hour hand moves from one number to the next number in 1 hour. On the first clock face the hour hand will move to which number next?

The minute hand moves once around a clock face in one hour.

When the minute hand is at 12 and the hour hand is at 10, the time shown is 10 o'clock.

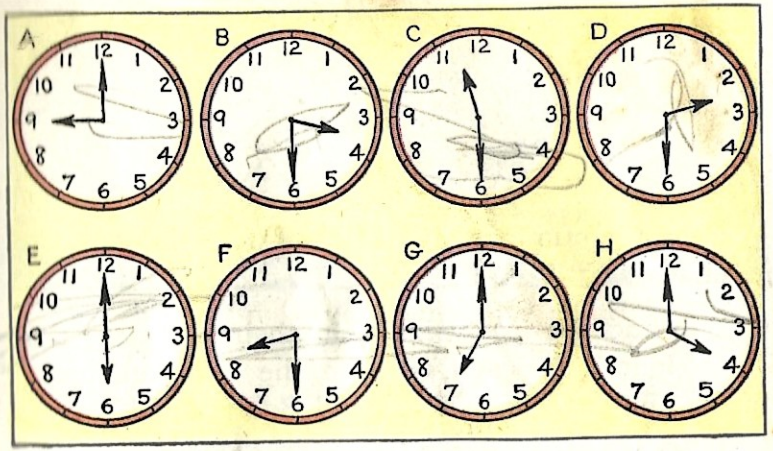
When the minute hand is at 6 and the hour hand is between 2 and 3, the time shown is half past 2.

What time does each of these clocks show?



Draw a clock face and make the hands on it show what time your school begins in the morning.

Telling Time

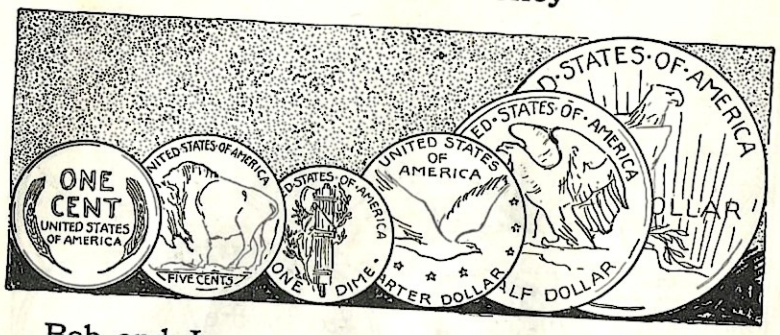


Each of the clocks above has a letter near it.

1. What letter is near the clock face above that shows nine o'clock? four o'clock?
2. Which clock shows half past eleven?
3. Which clock shows half past two?
4. Which clock shows six o'clock?
5. Which clock shows that it is half past eight?
6. Which clock shows seven o'clock, or the time Peter gets up in the morning?
7. Which clock shows half past three, or the time when Amy's school closes for the day?
8. Draw 4 clock faces and make the hands on each clock show one of the following:

   a. 2 o'clock
   b. half past four
   c. the time you go to bed
   d. the time you get up in the morning.

United States Money



Bob and Joe are twins. On their birthday, their Uncle John gave each of them the same amount of money. He gave Joe a dollar and Bob two half dollars.

1. One dollar equals how many half dollars?
2. How many cents equal a half dollar?
3. How many cents equal a dollar?

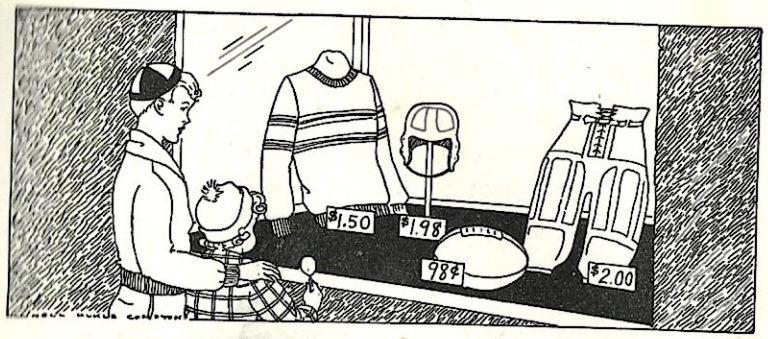
The dollar sign is $ or $. Five dollars is written $5. The cent sign is ¢. Eight cents may be written 8¢. Read these: $1 $10 $18 $135 5¢ 10¢ 25¢ 3¢ 98¢.

Silver dollars are heavy. A dollar bill, which is paper money, will buy as much as a silver dollar.

Under the name of each coin in the chart below, see how many of the other coins equal that coin.

A Nickel	A Dime	A Quarter	A Half Dollar	A Dollar
5 cents	10 cents 2 nickels	25 cents 5 nickels 2 dimes and 1 nickel	50 cents 10 nickels 5 dimes 2 quarters	100 cents 20 nickels 10 dimes 4 quarters 2 half dollars

Dollars and Cents



Joe had a half dollar saved before his birthday. Now he has a dollar and a half, or a dollar and fifty cents.

To write dollars and cents together in figures, first write a dollar sign ($) and the number of dollars; then make a cents' point (.), to separate the dollars and cents, and write the number of cents after the point.

A short way to write 1 dollar and 50 cents is $1.50.

Bob had a nickel saved before his birthday. Now he has 1 dollar and 5 cents, or $1.05.

98¢ may be written $.98. Both mean the same.

What is the price of the football? What is the price of the helmet? of the sweater? of the pants?

Bring to class pictures and prices of things you would like to use playing store. Make a list of things you would like to buy. Put the price after each thing on your list. The $ and ¢ signs are never used together.

Using a dollar sign each time, write neatly in figures:

1. Seventy-eight cents
2. Five cents
3. Five dollars and forty cents
4. Two dollars and eight cents
5. One dollar and ninety-eight cents

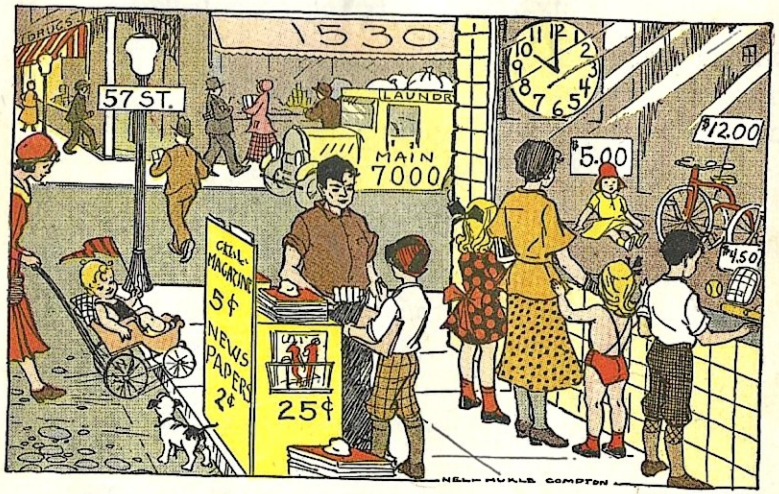
Some Uses of Numbers

Did you ever stop to think of the many ways we use numbers? Answer these questions:

1. What time is it, please?
2. How far from school do you live?
3. How many pounds do you weigh?
4. How much do you think roller skates cost?

Numbers also help us to find things and places.

5. Who sits in the first seat in the third row?
6. His cousin lives at 258 Main Street.
7. Joan's teacher said, "Turn to page 125."



8. What numbers can you find in this picture?
9. What time is shown by the clock?
10. What question could you answer with each number that you see in the picture?

Choosing a Captain

The class must have two captains to choose sides for a race. Miss Taylor, the teacher, says,

"I shall write a number between 10 and 99. Each of you write a number between 10 and 99. The two whose numbers are nearest mine will be the captains."

Jean wrote 49; Spencer, 85; Bert, 31; Helen, 50; Billy, 42; Dan, 13; Mary, 96; Frances, 77; Charles, 59; and Amy, 28.

Miss Taylor then wrote her number, 55, on the blackboard. Who were made captains?

Choose your captains for a race. When your teacher says, "Start," copy the examples, and add. The side with the fewest mistakes wins.

	a	b	c	d	e	f	g	h	i	j
1.	2	3	5	4	2	3	5	7	6	4
	2	3	5	4	3	2	2	2	6	2
2.	7	2	2	5	8	2	2	3	9	2
	7	4	9	4	2	7	5	8	2	8

To Find What Addition You Know

Try to write all the answers on your paper in 4 minutes or less.

	a	b	c	d	e	f	g	h	i	j
1.	1	3	1	2	4	2	1	3	1	2
	3	2	1	1	1	3	2	1	4	2
	5	3	2	1	4	1	3	2	1	3
	5	4	5	8	4	6	3	4	5	5
2.	1	0	0	4	3	0	5	2	0	0
	0	0	5	0	0	4	0	0	1	3
	0	9	6	0	0	0	8	0	7	1
	7	0	0	8	6	2	0	9	0	7
3.	3	5	5	1	2	4	2	6	2	4
	6	1	3	9	7	2	8	1	6	3
	7	4	5	8	5	3	7	4	9	6
	1	6	2	1	4	7	2	5	1	3
4.	3	6	6	8	2	7	6	8	9	7
	8	2	6	2	9	4	4	3	2	3
	8	9	5	5	6	4	4	3	9	7
	4	3	6	7	5	8	7	9	4	5
5.	7	7	5	9	9	4	9	6	8	6
	7	6	8	9	6	9	8	9	8	7
	8	9	8	8	9	6	7	8	5	7
	7	5	9	6	7	8	9	5	9	8

To Find What Addition You Know

Add. Write only the answers on your paper.

	a	b	c	d	e	f	g
6.	36	25	63	44	27	25	53
	53	63	24	35	72	42	40
	55	94	73	82	92	70	90
	90	72	86	55	83	98	30
7.	0	2	2	2	2	3	2
	3	2	7	0	1	0	6
	1	2	0	5	2	2	1
8.	30	13	17	22	35	20	23
	20	22	10	21	33	25	41
	40	13	11	41	30	34	25

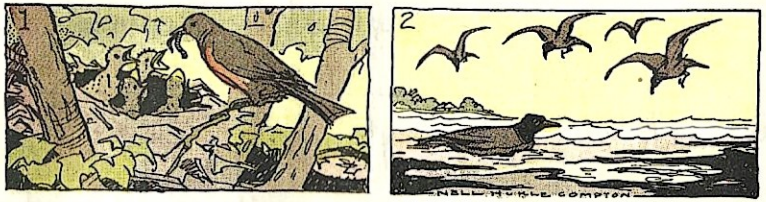
Where to Find Help if You Need It

Did you have trouble with any part of this test? For each of the eight parts of the test on pages 12 and 13, you will find a chart or an explanation to help you on one of the following pages:

Part 1 on page 14.
Part 2 on page 16.
Part 3 on page 18.
Part 4 on page 22.
Part 5 on page 24.
Part 6 on page 29.
Part 7 on page 30.
Part 8 on page 34.

If you worked all parts of the test and made no mistakes, turn to page 15. You will want your own silent-helpers, but you need not study the helping pages whose numbers are given above.

What Addition Means



The mother bird and her four baby birds make a family of _____ birds in picture 1.

In picture two, 4 birds and 1 bird are _____ birds.

Jane had 3¢ and Ted had 2¢. They put their money together to buy as much candy as they could. How many cents did they have to spend for candy?

You added to find these answers.

To add you may write the numbers this way:

$$\begin{array}{r} 3 \\ 2 \\ \hline 5 \end{array}$$

This example is read: 3 and 2 are 5.

When you add, the answer is called the *sum.*

On the chart below there are 20 *addition facts* which you will use a great many times. If you study these facts as you are taught on page 15, your number work will be easier for you.

Study Chart 1. Addition

1	2	4	2	1	1	3	1	3	2
2	3	1	2	3	4	1	1	2	1
3	5	5	4	4	5	4	2	5	3
3	1	5	2	1	4	3	1	3	2
3	6	5	4	5	4	5	8	4	5
6	7	10	6	6	8	8	9	7	7

Silent-Helpers

With cards or heavy paper make a silent-helper for each of the addition facts on the study charts.

This is the way John made one of his silent-helpers:

On the face of the card he wrote the numbers with the sum, like this:

$$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$$

On the back he wrote the numbers without the sum, like this:

$$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$$

How to Use Your Silent-Helpers

1. Look at the face and think: "3 and 2 are 5."
2. Look away and try to remember what you saw.
3. Look at the card again and turn it face down as you think: "3 and 2 are 5."
4. Write the sum on a piece of paper.
5. Turn the card face up again. Is the sum on your paper the same as the sum on the card?

Study each addition fact in the same way.

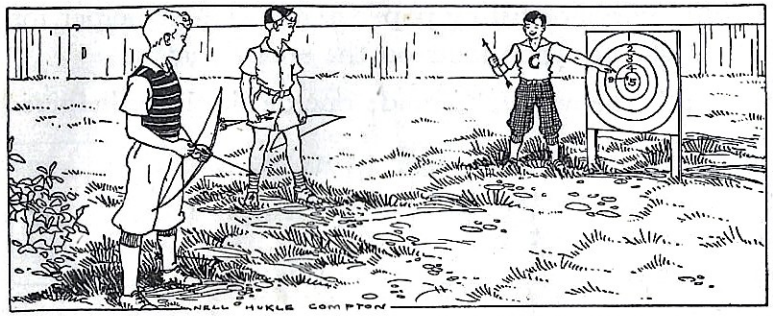
Remember that you will need to use these facts many times. Be sure to keep all of your silent-helpers.

Testing with Silent-Helpers

Have some child show you the backs of your silent-helpers, and hear you say the sums. Put the ones that you do not know in a separate pack for extra study. Later on, mix the cards and try again and again to give the sums. Each time try to do better than before.

+ means *and* or *add.* It is called the *plus sign.*

How to Show "Not Any"



Each boy took two shots at the target. Frank made a score of 5 the first time. The second time he missed the target; so he made no score that time.

For *no*, *not any*, or *none* he wrote 0. 0 is called *zero*.

The boys' scores are:	Frank	Dick	Fred
First turn	5	0	0
Second turn	0	4	0
Sum, or total	5	4	0

How many times did Fred hit the target?

Study Chart 2. Addition

0	0	2	1	0	0	4	3	0	5
1	3	0	0	0	5	0	0	4	0
1	3	2	1	0	5	4	3	4	5
0	0	7	0	9	0	8	0	6	1
2	6	0	8	0	7	0	9	0	7
2	6	7	8	9	7	8	9	6	8

0 + a number = the number.

A number + 0 = the number.

=means *are* or *equal*. It is called the *equal sign*.

Number Stories

1. Bobby's mother asked him to see how many oranges there were in the house. He found 2 in the fruit basket and 3 in the ice box. How many oranges did he find?

2. Susan had 3 pennies. Her father gave her 3 pennies more. How many pennies did Susan have then?

3. Jack has one hen and eight little chicks. In all he has how many chickens?

4. Dan got a new bank for his birthday. He put in 3 cents that he had saved. The next day he earned a nickel and put that in his bank too. How much money was in his bank then?

5. "Arthur, let us see who can chin himself more times with only one rest," Sam said.

Sam hung from the branch of a tree and pulled himself up till his chin touched the branch 4 times. He hung for a moment to rest, then tried once more, but he was too tired to chin himself again.

Arthur said, "Your score is 4 and 0 or _____."

6. Arthur chinned himself 3 times, rested a moment, and then chinned himself 2 times more. What was his score?

7. Mother made 5 little brown cakes and 5 white cakes. Altogether she made how many cakes?

8. There are 4 rooms on the first floor of our house and 4 rooms on the second floor. We have how many rooms in our house?

9. How many are 3 birds and 4 birds?

More Addition Facts

If you need help, look at the chart below:

1. Peter had 6 cents and his sister paid him 3 cents for going to the store. Did he have enough pennies to change for a dime?

2. David had 7 story books and Aunt Mary gave him 2 for his birthday. How many books did David have then?

3. Sue and Mae play with their dolls. Sue has 4 dolls and Mae has 3. How many dolls have both?

4. Tom bought a pencil for 5 cents and a ruler for 4 cents. How much did the two things cost?

5. Frank has 4 blue marbles and 5 green marbles. How many marbles of both kinds has he?

6. In John's row at school there are 5 boys and 3 girls. How many pupils sit in his row?

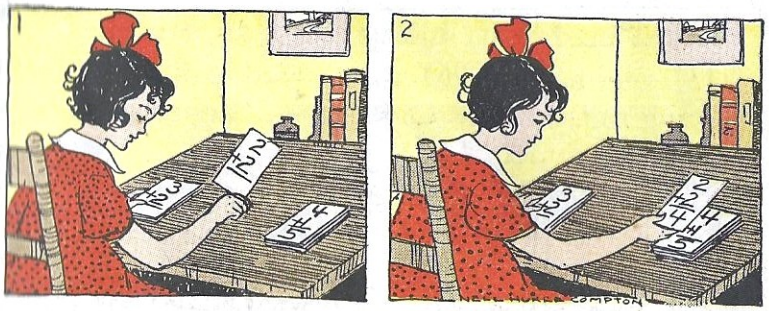
7. Allen had 4 toy soldiers and he bought 6 more. How many soldiers did he have then?

8. In Helen's family there are 5 children and her 2 parents. How many people are in Helen's family?

Study Chart 3. Addition

1	3	2	2	2	5	4	5	6	4
9	6	8	6	7	1	2	3	1	3
10	9	10	8	9	6	6	8	7	7
5	7	4	5	8	4	7	3	9	6
4	1	5	2	1	6	2	7	1	3
9	8	9	7	9	10	9	10	10	9

How Laura Studies Her Number Facts



1. Laura studies her number facts with her silent-helpers as she was taught to do on page 15.

2. She wants to be sure to learn every fact well; so, she makes a silent-helper for each new fact, and hides it among the other silent-helpers.

3. Laura practices in this way:

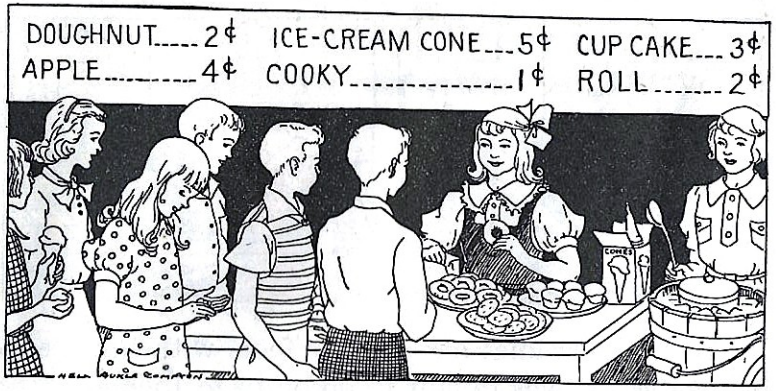
She puts the cards all together in a pack, with the answers turned down.

She picks up the top card, which may be $\begin{array}{r} 2 \\ +2 \\ \hline \end{array}$, and thinks to herself, "2 and 2 are 4." Then she turns the card over as she puts it down to make another pile, and she sees that the sum, 4, is right.

Study the pictures on this page. Then practice with your silent-helpers, as Laura does. Do this until you can think the sums without a mistake as fast as you can turn your silent-helpers.

4. Some days Laura practices with all of her silent-helpers, but most of her practice is on the ones that she is not sure she knows.

A Food Sale



1. How much should John pay for a doughnut and a cup cake?

2. May bought an apple and a cooky. How much money does she need?

3. Sue bought an apple and an ice-cream cone. She needs how much money to pay for them?

4. Fred wants to buy 2 cookies and an apple. He needs how much to pay for them?

5. Betty has 5 pennies. She wants an ice-cream cone and a cooky. How much more money does she need to pay for them?

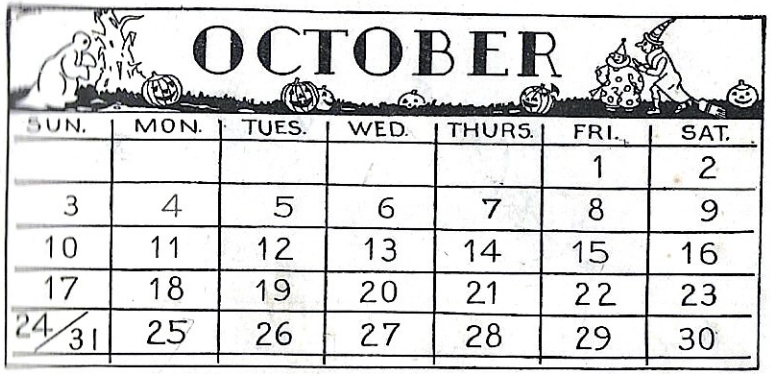
6. A roll and an ice-cream cone will cost how much?

7. Choose two things that you would like to buy at the food sale. How much money would you need?

*8. Bob has 10 cents to spend. Choose things that he might buy.

*9. An apple and a cup cake cost how much more than an apple and a doughnut?

Months of the Year



1. Name the days of the week; the twelve months of the year.

2. Look at a calendar to find which month comes after October; before October; before January; after May; after April; before March.

3. On what day of the week did your school begin this year? on what date?

4. How many days are there in October?

5. Which are the autumn months? the winter months? the spring months?

6. June, July, and August belong to which season?

The Months and the Seasons

Autumn or Fall	Winter	Spring	Summer
September	December	March	June
October	January	April	July
November	February	May	August

*7. Name four special holidays and tell in what month each comes.

A Dozen

If you need help, look at the chart below.

1. Mother plans to put pink frosting on 6 little cakes and brown frosting on 6 others. In all she plans to frost _____ cakes, which are a dozen.

2. Jean asked the baker for a dozen cookies, some brown and some white. The baker gave her 7 brown cookies and 5 white ones. Did Jean get a dozen cookies?

3. Frances bought 8 pink roses and 4 white ones. The clerk said, "_____ roses, or just _____ dozen."

4. "There," Mother said, "I have made 9 jam and 3 meat sandwiches for your picnic."

"Mother, _____ sandwiches are plenty," Joan said.

Study Chart 4. Addition

8	6	7	6	6	2	3	9	7	8
2	4	3	2	6	9	8	2	4	3
10	10	10	8	12	11	11	11	11	11
5	8	6	4	3	5	9	4	7	9
6	4	5	7	9	7	3	8	5	4
11	12	11	11	12	12	12	12	12	13

A Picnic at the Lake

1. Mary is having a picnic at the lake on her birthday. Five girls and 6 boys came. How many children are at her picnic?

2. The boys ate 6 meat sandwiches, and the girls ate 6 meat sandwiches. How many meat sandwiches did they all eat?

3. Mary's mother made 4 jelly sandwiches and 8 peanut butter sandwiches. How many sandwiches of both kinds did Mary's mother make?

4. Mary bought 7 brown cupcakes and 5 white ones. How many cupcakes of both kinds did she buy?

5. Mary said, "I bought _____ dozen cupcakes."

6. Tom brought 9 apples and Jim brought 4 apples. How many apples did Tom and Jim bring?

7. Alice and Norma each brought 6 bananas. How many did both bring?

More Addition Facts

1. In a tug of war there were 7 boys on one side and 7 on the other. How many boys were in the tug of war?

2. Jessie paid a nickel for a pencil and 8¢ for a pad of paper. How much did she pay for both?

3. Jimmie and his father went to a lake to fish. Jimmie caught 4 bass and 9 sunfish. How many fish did he catch?

4. Mary spent 7¢ for carfare in going to visit her Aunt Martha. Then she spent 8¢ for candy. How much did she spend?

5. A third-grade class wants two baseball teams with nine players on each team. How many players must they have in all?

6. A nickel and 9¢ are _____¢.

7. The sum of 9 and 7 is _____. 7 + 9 = _____.

8. The sum of 8 and 6 is _____. 8 + 7 = _____.

9. 9 + 5 = _____. 8 + 9 = _____. 9 + 6 = _____.

10. 8 plus 5 = _____. 9 plus 8 = _____. 6 plus 7 = _____.

Study Chart 5. Addition

5	4	6	7	9	8	7	9	6	9
8	9	9	7	6	8	6	8	7	9
13	13	15	14	15	16	13	17	13	18
8	9	6	8	7	9	8	8	7	5
6	5	8	5	8	7	9	7	9	9
14	14	14	13	15	16	17	15	16	14

Interesting Number Stories

1. Ruth brought 5 books from home, and Ann brought 8 books. How many books did Ruth and Ann bring?

2. On one plate there are 4 pieces of light cake and 9 pieces of dark cake. Are there more or fewer than a dozen pieces of cake?

3. Mary's mother took 5 girls and 4 boys home in her car. She took how many children home?

4. When Tom and Joe were visiting Grandmother, they hunted for eggs. Tom found 8, and Joe found 7. Altogether they found how many eggs?

5. Sue and Mary have a lemonade stand. Sue brought 7 lemons and Mary brought 6. How many lemons did both bring?

6. In a game 6 girls were on one team and 8 on the other team. How many girls were in the game?

7. There were 7 girls and 7 boys at a party. How many children were at the party?

8. Carl earned 9 cents today by raking the lawn and 5 cents for going to the store. How much did he earn today?

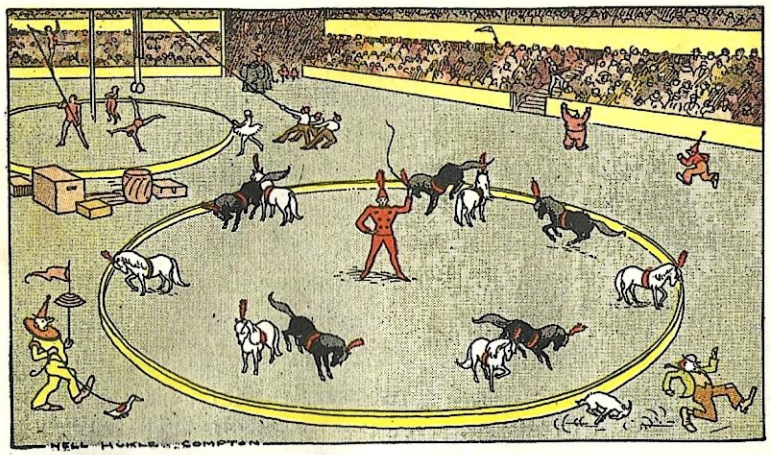
9. The sum of 3 and 9 is _____. 8 + 3 = _____.

10. 6 plus 9 = _____. 5 + 7 = _____. 5 + 9 = _____.

Add and write only the sums.

	a	b	c	d	e	f	g	h	i	j
11.	6	9	6	8	3	5	2	9	7	3
	5	7	9	7	5	4	5	6	2	6
12.	4	5	9	8	3	8	6	8	5	6
	8	6	4	5	2	8	2	9	7	6

Circus Day



1. When we went to the circus we first saw the tents. There were 5 big tents and 9 smaller ones. How many tents were there?

2. In the morning parade 4 elephants pulled a big circus wagon and 3 elephants pushed it. How many elephants were used to move the wagon?

3. In the afternoon show 6 white ponies stood around in a ring while 5 black ponies jumped over them. How many ponies were in the circus ring together?

4. There was a dog race just in front of the seats. Seven big dogs and six little dogs raced. A little dog won. He was the fastest of all the _____ dogs.

5. When we reached home Mother said, "Well, we have had a fine day! 3 hours this morning and 4 hours this afternoon." How many hours in all?

Measures

Harriet and Kate went to visit their grandmother in the country. Grandmother said, "I will give you some strawberry jam to take home." So grandmother took a quart jar of jam and an empty pint jar from the pantry shelf and filled the pint jar with jam.

Harriet said, "You have given us half of the jam, Grandmother."

"Yes," said Grandmother, "the smaller jar holds a pint and there are two pints in a quart."

1. Fill a pint jar with water. Then empty the water from the pint jar into a quart jar. Fill the pint jar again and empty it into the quart jar. How many pints of water fill the quart jar?

1 quart (qt.) = 2 pints (pt.)

2. How many pints are there in a quart?

3. One pint is what part of a quart?

4. How many pints are there in 2 quarts?

*5. How many quarts of jam would it take to fill 4 pint jars? 6 pint jars? 8 pint jars?

Practice and Number Stories

Write only the sums:

	a	b	c	d	e	f	g	h	i	j
1.	2	3	8	3	2	1	7	4	0	4
	5	4	0	2	4	7	0	3	6	4
2.	6	3	3	2	5	8	7	4	2	7
	3	8	3	6	6	2	4	8	9	2
3.	9	5	8	6	7	9	9	7	6	6
	6	8	8	8	7	8	9	6	9	7
4.	8	9	4	8	7	9	5	7	8	8
	6	5	9	5	8	7	9	9	7	9
5.	3	4	0	3	9	0	3	6	7	8
	9	7	0	5	2	5	7	6	5	4
6.	8	4	5	4	5	6	0	7	3	4
	3	0	4	6	7	5	9	3	6	5

7. Jerry sold magazines. One week he sold 6 copies, and the next week he sold 8. How many did he sell in the two weeks?

8. Alice paid 7 cents for a pint of milk and 9 cents for candy. How many cents did Alice spend?

9. Mary's mother asked her to go to the store for a loaf of bread which costs 5¢ and a can of soup which costs 9¢. How much money should she take?

10. Louis sold his top for 7 cents and his marbles for 6 cents. How much money did he get for both?

How to Add Two-Figure Numbers

In one third grade there are 24 pupils. In the other third grade there are 32 pupils. How many third-grade pupils are in that school?

To add 24 and 32, write 24 and under it write 32.
24 = 2 tens and 4 ones. 32 = 3 tens and 2 ones.

```
 24   Think: 4, 6. Write 6 under ones.
 32          2, 5. Write 5 under tens.
 56          The sum is 56 pupils.
```

Tell how we get each answer given below:

	a	b	c	d	e	f	g
1.	50	40	32	54	46¢	$14	$ .65
	29	85	23	64	23¢	23	.74
	79	125	55	118	69¢	$37	$1.39

Copy the examples below, and add:

2.	34	31	73	82	42¢	$45	$ .56
	65	77	25	96	77¢	93	.50
3.	71	45	53	91	65¢	$53	$ .32
	96	64	73	24	23¢	84	.85
4.	90	70	89	62	28	72	91
	80	67	70	94	91	47	41

5. Saturday Paul gathered 16 eggs. Sunday he gathered 20. How many eggs did he gather on both days?

How to Add Three Scores

George showed the children a new game.

He drew 3 circles and numbered each, as in the picture. Five steps away he made a "toe" line and said:

"Sister made these bean bags. You take turns tossing the 3 bags. Your score is the number in the ring where the bag stops. If a bag stops on a line, your score is the smaller number."

When George threw the bags he made these scores:		
First toss	2	George thought, "2,
Second toss	2	and 2 are 4,
Third toss	3	and 3 are 7."
"My total score is	7.	Try to beat it," he said.

Are these children's total scores right?

Frank	Anne	Hugh	Ethel	Alice
1	2	2	0	3
2	1	2	3	3
0	3	2	1	3
3	6	6	4	9

Column Addition

When numbers are written as in the example at the left, we say they are in a *column*. Did you notice that when George added his first two scores, he said, "2 and 2 are 4"? He did not write 4, though. He kept 4 in mind and added the next number. He thought, "2 and 2 are 4, and 3 are 7." He wrote 7 under the line in the column.

2
2
3
7

"Now, I'll add another way to be sure my work is correct," said George. Then he started at the line and added up. He thought, "3 and 2 are 5, and 2 are 7." "My work *checks* because I get the same sum when I add up that I get when I add down," he said.

When you can add a number that you see to a number that you are thinking, it will be easier for you to add numbers written in columns.

Practice on these:

	a	b	c
1.	Three and 0 =	Three and 3 =	Four and 2 =
2.	Three and 1 =	Six and 3 =	Four and 0 =
3.	Two and 1 =	Five and 2 =	Seven and 2 =
4.	Eight and 1 =	Six and 2 =	Four and 5 =

Now make these additions and check your answers:

	a	b	c	d	e	f	g	h	i	j
5.	1	3	3	3	3	2	4	3	1	2
	2	1	0	3	1	3	3	5	5	2
	3	2	1	3	0	2	2	1	2	5

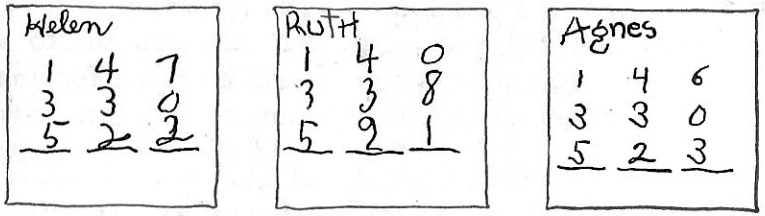
Who Won Each Game?

Jean, Bess, and Bob played Bean Bag during recess. Their scores are shown below. Who won each game? Be sure to check each sum before you say who won.

First Game			Second Game			Third Game		
Jean	Bess	Bob	Jean	Bess	Bob	Jean	Bess	Bob
3	1	2	0	2	3	3	3	2
0	3	2	2	1	2	3	1	3
2	2	3	1	0	3	3	2	2

Helen, Ruth, and Agnes copied the examples below.

Make the additions, and check each sum:



1. Which girl had the neatest paper? Why?
2. Which girl made the best figure 1? 2? 3? 4? 5?
3. Which girl made the straightest and neatest column?
4. Which column was easiest to add? Why?

Write these figures in neat, straight columns. Add.

(a) 2, 4, 3. (b) 9, 0, 0. (c) 2, 7, 0.
(d) 1, 3, 5. (e) 0, 1, 8. (f) 6, 0, 3.
(g) 5, 2, 1. (h) 3, 6, 0. (i) 8, 0, 1.

Number Stories

1. Mother, Jane, and Sara went to the library together. Mother got 3 books, Jane got 4, and Sara got 2. How many books did they all get?

2. Jerry's father has 4 black horses, 3 grey horses, and 2 brown horses. How many horses has Jerry's father?

3. Jerry counted 2 tan chicks, 5 white chicks, and 3 black chicks with one of his hens. How many chicks did the hen have?

4. "Please get me 9 nice roses from the garden," Aunt Mary said to Sue. Sue cut 4 roses from one bush and 5 from another bush. Did Sue have enough roses then?

5. Tom counted 2 turkeys with the chickens, 4 in a tree, and 5 behind the straw stack. How many turkeys did Tom count?

$$\begin{array}{r} 2 \\ 4 \\ 5 \\ \hline 11 \end{array}$$

6. Lee paid 5¢ for a pencil, 3¢ for an eraser, and 2¢ for colored chalk. How much did he pay for all?

7. Fanny colored 4 eggs blue, 4 red, and 4 green. How many eggs did Fanny color?

8. Ned counted 6 cars from Ohio, 3 from Iowa, and 4 from Texas. How many did Ned count?

9. On her birthday, Lois got 4 white handkerchiefs, 3 blue ones, and 4 pink ones. How many handkerchiefs did she get?

10. Warren had 2 big rabbits, 6 middle-sized rabbits, and 9 little rabbits. How many rabbits had he?

11. Alice found 5 eggs in one nest, 4 in another, and 7 in another. How many eggs did she find?

Adding More Two-Figure Numbers

Alfred, Will, and Harry gave a show in their garage. They sold tickets the day before the show. Alfred brought in 12¢; Will, 14¢; and Harry, 23¢. How much did the three boys bring in?

12¢	Start at the top to add and think:
14¢	2, 6, 9. Write 9 under the ones.
23¢	1, 2, 4. Write 4 under the tens.
49¢	The boys brought in 49¢ altogether.

To check your answer, start at the line and add up, first the ones, then the tens.

Write these numbers on your paper, add and check:

	a	b	c	d	e	f	g	h
1.	13	70	25	32	54	30	21	32
	22	25	50	12	15	50	12	50
	31	42	40	65	30	48	53	26
	66	137						
2.	23	52	41	61	43	14	22	13
	10	13	22	15	40	25	36	12
	75	33	14	22	25	10	50	13

3. May bought a spool of thread for 12 cents, some ribbon for 23 cents, and some buttons for 24 cents. How much did she spend for all?

Find the sum of:

4. 30, 56, and 10.

5. 20, 44, and 33.

Two-Figure Addition Practice

Write only the sums and check each answer:

	a	b	c	d	e	f	g	h
1.	23	33	26	86	82	13	91	32
	35	96	43	62	44	35	34	43
2.	22	11	32	12	30	43	61	12
	32	34	34	41	26	44	15	43
	45	53	42	46	42	32	73	34
3.	30	23	20	20	18	17	16	15
	14	44	37	47	30	30	40	42
	53	21	41	52	31	41	22	41
4.	11	40	35	60	14	33	53	61
	34	27	31	17	25	42	10	14
	52	71	42	22	60	14	74	73

5. Ella has two packages to mail. One takes 24¢ in stamps. The other package takes 75¢ in stamps. How much must she pay to send both?

6. Frank's brother delivers 33 papers on Oak Street, 42 on Maple Street, and 14 on Elm Street. How many papers does he need for those three streets?

7. Earl has 60 cents in his bank and 17 cents in his pocket. He can earn 22 cents after school. Will he have enough money then to buy a toy airplane that costs a dollar?

*8. Ray had 46 pennies in one bag and 32 pennies in another. Billie said, "I have a half dollar and a quarter. I'll trade them for all your pennies." Who had more money, Ray or Billie?

Addition Test

Write as many sums as you can in 3 minutes:

	a	b	c	d	e	f	g	h	i	j
1.	3	1	2	3	1	4	1	2	3	5
	5	5	4	3	6	4	8	5	4	5
2.	2	1	3	1	2	4	2	1	3	1
	2	4	1	2	3	1	1	1	2	3
3.	1	7	0	8	0	0	0	6	9	0
	7	0	9	0	2	6	8	0	0	7
4.	0	0	2	5	0	3	4	0	0	1
	3	1	0	0	4	0	0	5	0	0
5.	6	9	4	7	3	5	8	5	4	7
	3	1	5	2	7	4	1	2	6	1
6.	4	2	6	2	4	2	1	5	5	3
	3	6	1	8	2	7	9	3	1	6
7.	7	9	3	4	4	6	5	5	9	8
	5	4	9	7	8	5	7	6	3	4
8.	7	9	8	6	7	2	8	6	6	3
	3	2	3	4	4	9	2	6	2	8
9.	7	5	8	7	6	9	8	8	9	8
	8	9	5	9	8	7	6	9	5	7
10.	6	8	6	9	4	9	9	5	7	7
	7	8	9	8	9	6	9	8	6	7

Addition Test

Write only the sums:

	a	b	c	d	e	f	g
1.	34	52	22	44	36	52	33
	20	44	57	53	42	36	65
2.	60	50	42	28	45	27	63
	20	68	87	51	60	92	84

Copy the examples in rows 3 and 4. Find the sums.

3.	0	1	4	6	7	5	4
	6	8	0	3	2	3	5
	2	0	5	5	5	6	4
4.	20	12	48	62	36	40	53
	50	15	40	11	43	17	45
	10	42	41	11	50	12	21

5. The answer in addition is called the _____.

6. Mr. Grant, who is a conductor on a street car, said that 61 passengers rode on his car going out to Lester Park and 37 others rode back. How many passengers rode on Mr. Grant's car that trip?

7. Aunt Martha asked Eva to find how many chickens came to get their feed. Eva counted 21 black, 32 white, and 16 red chickens. How many chickens came to get their feed?

*8. Fred had a new ball that cost 50¢. He gave the ball and a dime to George for a puppy. How much did the puppy cost Fred?

To Find What Subtraction You Know

Try to write all the answers on your paper in 4 minutes or less.

	a	b	c	d	e	f	g	h	i	j
1.	2	5	3	5	3	5	4	4	4	5
	1	3	1	4	2	2	3	2	1	1
	6	6	8	7	6	7	6	8	7	8
	3	1	7	6	5	1	4	1	5	6
2.	4	3	0	2	2	5	4	1	1	5
	4	0	0	0	2	5	0	1	0	0
	8	7	8	6	3	9	7	6	7	9
	0	0	8	0	3	0	7	6	4	9
3.	8	10	6	9	9	10	7	9	7	10
	4	4	2	4	7	9	3	8	2	8
	8	9	8	8	9	10	9	10	10	10
	2	6	3	5	1	5	3	6	1	2
4.	11	10	12	9	14	12	10	11	9	11
	6	3	4	2	8	6	7	9	5	2
	16	13	12	11	14	12	18	11	14	12
	8	5	5	7	5	7	9	3	6	3
5.	17	14	12	15	12	11	13	13	15	11
	8	7	8	7	9	5	8	6	9	4
	11	13	14	13	16	16	15	17	15	13
	8	9	9	7	9	7	6	9	8	4

To Find What Subtraction You Know

Subtract. Write only the answers on your paper.

	a	b	c	d	e	f	g
6.	89	67	$.98	94	97	59	$96
	36	45	.35	82	73	35	32
7.	99	$85	56	44	$.68	36	77
	40	60	30	20	.20	10	40
8.	76	92	90	$75	84	88	$.37
	26	62	40	45	34	28	.17
9.	87	69	$.58	96	89	$77	46
	85	66	.55	91	80	72	41
10.	59	86	79	98	88	77	69
	6	5	3	3	6	2	9

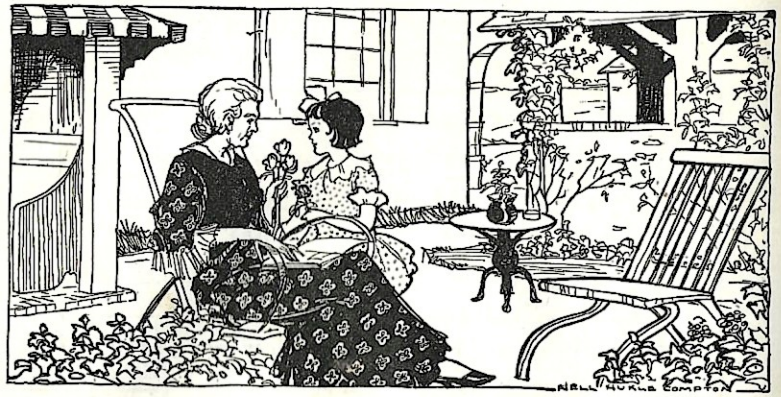
Where to Find Help if You Need It

For each of the ten parts of the test on pages 38 and 39, you will find a chart or an explanation which will help you on one of the pages listed below.

Part 1 on page 40.
Part 2 on page 41.
Part 3 on page 43.
Part 4 on page 44.
Part 5 on page 46.
Part 6 on page 50.
Part 7 on page 50.
Part 8 on page 50.
Part 9 on page 50.
Part 10 on page 50.

If you worked all parts of the test correctly, work the number stories to page 52, and make your silent-helpers for the subtraction facts on the charts.

How Many Are Left?



Jane had 4 flowers. She gave 3 of them away. How many did she have left? 3 from 4 is 1.

When you take away 3 from 4, you *subtract* 3 from 4 and get 1. Subtract means *take away* or *take from.*

To subtract you may write the numbers with the larger number above like this:

$$\begin{array}{r} 4 \\ -\ 3 \\ \hline 1 \end{array}$$

This example is read: 3 from 4 is 1.

When you subtract, the answer is called the *difference.*

Be sure to make a silent-helper for each fact below.

Study Chart 1. Subtraction

3	5	5	4	4	5	4	2	5	3
1	2	4	2	1	1	3	1	3	2
2	3	1	2	3	4	1	1	2	1
7	7	8	6	8	6	6	8	7	6
6	1	1	3	7	1	5	6	5	4
1	6	7	3	1	5	1	2	2	2

How Many More and How Many Fewer?

1. Ned and Charles were playing a game. Ned made a score of 5 and Charles did not make any score. Charles said, "You have _____ more points than I have, Ned."

2. The next day Charles made a score of 7 and Ned's score was 4. Ned said, "Well, today my score is _____ less than yours."

3. Tom earned 8¢. ⑭ ⑭ ⑭ ⑭ ⑭ ⑭ ⑭ ⑭
   Jack earned 8¢. ⑭ ⑭ ⑭ ⑭ ⑭ ⑭ ⑭ ⑭

How many more cents did Jack earn than Tom? How many fewer?

Find the answers below:

4.	4−0=	7−4=	9−9=	8−0=
5.	6−6=	2−0=	5−5=	8−8=
6.	9−0=	2−2=	3−0=	4−4=

Be sure to make a silent-helper for each fact.

Study Chart 2. Subtraction

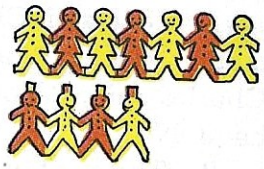
2	4	1	5	0	3	1	5	4	2
0	0	0	0	0	0	1	5	4	2
2	4	1	5	0	3	0	0	0	0
6	7	8	8	9	3	9	7	6	7
0	7	0	8	0	3	9	0	6	4
6	0	8	0	9	0	0	7	0	3

A number − 0 = the number.
A number − itself = 0.

− means *subtract*. It is called the *minus sign.*

Number Stories

1. Clara made 7 paper dolls.



Norma made 4 paper dolls.

How many more did Clara make than Norma?
Seven are how many more than 4? $7-4=__$.
How many fewer did Norma make than Clara?
Four are how many fewer than seven? $7-4=__$.

2. Betty is 7 years old and Nancy is 8. How much older is Nancy than Betty?

3. Roger lives 7 blocks from school. Sam lives 5 blocks from school. How much farther from school does Roger live?

To find how many more or how many fewer, subtract the smaller number from the larger number.

4. Fred bought five lollipops. He gave three of them away. How many had he left?

5. Ted had a nickel. He paid 5¢ for a new top. How many cents did he have left?

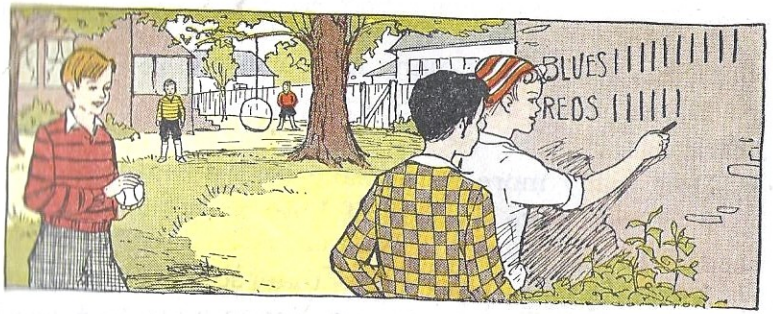
6. Mother bought half a dozen little cakes. We ate 4 of them for lunch. How many little cakes were left?

7. There were 8 children at Alice's party. Six of them were girls. How many were boys?

8. A third-grade class planted bulbs. At Christmas time they had 6 bowls of flowers. The children gave 3 bowls away. How many were kept for their own room?

To find how many are left, subtract the smaller number from the larger number.

Finding the Difference



1. The Blues made a score of 10 and the Reds made a score of 6. What was the difference between their scores?

2. Tim is 8 years old and Nan is 5. What is the difference between their ages?

3. What is the difference between 9 cookies and half a dozen cookies?

4. What is the difference in cost between a seven-dollar suit and a nine-dollar suit?

5. What is the difference between 4 and 10?

Think:
8
−5

To find the difference between two numbers, subtract the smaller number from the larger number.

Study Chart 3. Subtraction

9	9	6	8	10	10	10	9	7	7
−7	−8	−2	−4	−9	−4	−8	−4	−3	−2
2	1	4	4	1	6	2	5	4	5
8	8	8	9	9	9	10	10	10	10
−5	−2	−3	−6	−3	−1	−1	−5	−2	−6
3	6	5	3	6	8	9	5	8	4

How Many More Do You Need?

1. Marie has 8¢. She wants to buy a small doll that costs 14¢. How many more cents does she need?

These are the cents Marie has: (1¢) (1¢) (1¢) (1¢) (1¢) (1¢) (1¢) (1¢)

How many more cents make 14? 14−8=__.

2. If you have six cookies, how many more do you need to have a dozen?

3. The playground is 10 blocks from where Dick lives. After playing, Dick had walked 3 blocks toward home when he thought, "I have to go ___ blocks more."

4. Eight and how many more are 16? 6+?=11

5. Three and how many more are 12? 7+?=12

6. Six and how many more are 14? 5+?=13

7. Two and how many more are 9? 5+?= 9

8. 12−3=__ 9−5=__ 10−3=__ 11−2=__

9. 11−7=__ 14−5=__ 14−8=__ 18−9=__

10. 10−7=__ 12−4=__ 11−9=__ 14−8=__

11. 14−5=__ 11−3=__ 14−6=__ 12−5=__

To find how many more are needed, subtract.

Study Chart 4. Subtraction

9	10	10	9	14	12	11	12	11	11
2	3	7	5	8	4	6	6	9	2
7	7	3	4	6	8	5	6	2	9
12	16	12	11	18	12	11	13	14	14
5	8	7	3	9	3	7	5	5	6
7	8	5	8	9	9	4	8	9	8

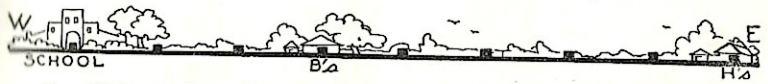
Practice and Number Stories

Write the differences on your paper:

	a	b	c	d	e	f	g	h	i	j
1.	9	12	10	16	9	12	11	10	18	11
	5	5	7	8	2	7	3	3	9	2
2.	12	14	12	11	13	11	14	12	11	14
	3	8	4	7	5	6	5	6	9	6
3.	8	9	8	9	7	8	8	9	9	9
	5	4	2	7	2	4	3	8	6	3
4.	10	7	9	6	10	10	6	10	10	10
	8	3	1	4	1	9	2	5	2	4

5. Frank is 16 years old and Betty is 8 years old. How many years younger is Betty than Frank?

6. Ben lives 3 blocks east of the school and Henry lives 8 blocks east of the school on the same street. How many blocks apart do Ben and Henry live?



7. What is the difference in time between 12 hours and 6 hours?

8. Fifteen cents is how much more than a dime?

9. A nickel is how much less than a dime?

10. Ralph read 8 pages and Edna read 6 pages. What is the difference between the number of pages that Ralph read and the number that Edna read?

11. Betty had 3 kittens and Charles had 6 rabbits for pets. What is the difference between the numbers of pets that they had?

More Subtraction Facts

1. Lee had 15¢. To make lemonade he bought three lemons for 9¢. How much money had he left?

2. Nine oranges are how many fewer than a dozen?

3. Peggy has 8¢. How much more money does she need to buy a 15¢ melon?

4. If Jack buys a dozen oranges he will buy how many more than enough to give one orange to each of eight boys?

5. Five are how many fewer than 13? 14−7= ?

6. The difference between 17 and 8 is how much?

Study Chart 5. Subtraction

15 − 7 = 8	17 − 8 = 9	13 − 8 = 5	11 − 5 = 6	14 − 7 = 7	11 − 4 = 7	12 − 8 = 4	12 − 9 = 3	13 − 6 = 7	15 − 9 = 6
13 − 7 = 6	11 − 8 = 3	17 − 9 = 8	14 − 9 = 5	16 − 7 = 9	13 − 9 = 4	16 − 9 = 7	15 − 6 = 9	13 − 4 = 9	15 − 8 = 7

A Candy Sale at School

To earn money to buy pictures for the school, the girls had a candy sale.

1. Fred bought 3 cents' worth of cream candy, 2 cents' worth of sugar candy, and 5 cents' worth of peanut candy. How much did he spend?

2. Agnes' mother gave her a dime. Agnes wants to save 3 cents for some baby ribbon. How much may she spend for candy?

3. Ruth spent 5 cents for sea foam and 3 cents for taffy chips. How much did Ruth spend? She gave the girl a dime. How many pennies should Ruth have received in change?

***4.** Bert spent 5 cents for a candy bar to take home to his mother. Then he bought 4 cents' worth of sugar candy and said, "I'll buy peanut candy with the rest of my 15 cents." How much did Bert spend for peanut candy?

5. What would you buy if you had 10 cents to spend for candy at that sale?

Checking on What You Know

Write the differences:

	a	b	c	d	e	f	g	h	i	j
1.	13	15	13	17	17	12	14	14	16	12
	6	7	7	9	8	9	7	9	7	8
2.	11	15	13	13	15	16	11	13	11	15
	8	9	8	9	6	9	5	4	4	8
3.	14	11	15	11	18	12	14	16	11	10
	5	6	6	7	9	7	9	8	8	5
4.	14	12	9	12	10	11	10	11	9	12
	8	6	2	4	3	6	7	9	5	5
5.	18	11	16	12	11	14	13	12	11	14
	9	3	8	3	2	6	5	7	7	5

	a	b	c	d
6.	13−7=	13−9=	10−6=	13−6=
7.	11−3=	11−7=	9−5=	8−5=

On your paper write the words *add* or *subtract* to complete the sentences:

8. To find how many more are needed, you should _____.

9. To find the total score, you should _____.

10. To find how many more one number is than another, you should _____.

11. To find the sum, you should _____.

12. To find the difference between two numbers, you should _____.

13. To find how much is left, you should_____.

Review

1. Catherine could get only 9 stations with their radio, but Bob got 16 stations. How many more stations did Bob get than Catherine?

2. Tim has bought a bar of soap for 6 cents, and a bunch of carrots for 9 cents. How much should he pay for both?

3. Agnes bought a spool of thread for 4 cents, a stamp for 2 cents, and a newspaper for 3 cents. How much did all cost her?

4. Agnes started from home with a dime and a nickel. How much money should she have left?

Number your paper 5a, 5b, and so on. Below the numbers on your paper, write the answers to the examples below:

	a	b	c	d	e	f	g	h
		4						
5.	9	4	15	13	7	16	8	14
	+8	5	−6	−9	+4	−7	+7	−8

Find the sums of these numbers.

6.	40	34¢	22		30	80	$73	$.22
	20	40¢	57	$56	19	6	51	.65
	15	25¢	30	71	60	53	5	.32

Copy, and put in the missing signs and numbers:

							3	
7.	9	13	14	87	17	12	4	68
	?	?	?	+32	?	−5	2	+ ?
	17	8	9	?	8	?	?	88

Two-Figure Subtraction

Helen has 79¢ in her bank. How many cents will be left after she takes out 25¢ to buy a bag?

Write the larger number. Under it write the smaller number.

```
 79   Think: 5 from 9, 4. Write 4 under ones.
-25         2 from 7, 5. Write 5 under tens.
 54         Helen will have 54¢ left in her bank.
```

Adding the answer and the smaller number, think: 4 and 5, 9; 5 and 2, 7. Because their sum equals the number at the top, the subtraction is correct, and we say that it checks.

There were 36 people in the bus when it left Hudson, but 4 boys got out at a pony farm. How many were left in the bus?

```
 36   4 from 6, 2. There is nothing to take
-4    from 3. Bring down the 3.
 32   Does this difference check?
```

Study these examples:

	a	b	c	d	e	f	g	h
1.	77	$.98	76	60¢	99	89	$.38	$.28
	40	.40	20	20¢	39	82	.32	.08
	37	$.58	56	40¢	60	7	$.06	$.20

Make these subtractions and check each:

2.	87	96	79	59	86¢	$84	$.99	$.78
	24	42	6	21	32¢	30	.86	.67
3.	45	$.89	$.27	38¢	56¢	$.68	$69	$.76
	13	.45	.12	26¢	43¢	.07	14	.35

Practice and Number Stories

Make these subtractions and check:

	a	b	c	d	e	f	g	h
1.	50	59	72	58	99	81	92	76
	10	9	21	58	68	30	52	45
2.	46	78	93	78	47	81	99	96
	40	25	43	52	30	61	7	91
3.	78¢	49	$93	58	78	59	97	97
	45¢	23	71	23	35	2	51	35

4. Henry weighs 87 pounds. His brother Philip weighs 67 pounds. How much more does Henry weigh than Philip?

5. Ellen weighed 64 pounds at the beginning of summer vacation. When she was weighed again just before school opened, her weight was 67 pounds. How much heavier was she?

6. Will lives 9 miles from Dundee. Bert lives 6 miles from Dundee toward Will's home on the same road. How far apart do they live?

7. Sam earned 67¢ selling papers this week and Hal earned 99¢. Sam earned how much less than Hal?

8. Jim saw a 98¢ boat. He had 7 dimes, a nickel, and a cent. Did he have enough money to buy the boat? If not, how much more did he need?

*9. To get to Benson, Dick's father drives over gravel roads for 6 miles and then on the pavement for 9 miles. Carl's father drives 19 miles on pavement all the way. Does Carl or Dick live nearer to Benson? How much nearer does he live?

Subtraction Test

Write as many answers as you can in 4 minutes.

	a	b	c	d	e	f	g	h	i	j
1.	5	6	4	5	6	4	8	2	7	3
	1	3	1	3	1	2	7	1	6	2
2.	8	5	6	5	4	3	6	7	8	7
	1	4	4	2	3	1	5	1	6	5
3.	5	8	4	0	6	7	1	1	7	3
	5	0	4	0	0	7	0	1	4	0
4.	2	4	8	9	3	7	2	9	5	6
	2	0	8	0	3	0	0	9	0	6
5.	10	8	9	7	8	7	10	9	10	8
	2	4	6	3	5	2	8	1	9	3
6.	10	8	10	9	10	9	10	9	9	6
	5	2	4	3	1	8	6	7	4	2
7.	14	11	16	12	13	18	11	14	11	9
	5	6	8	4	5	9	3	6	7	5
8.	10	9	12	10	12	14	11	12	11	12
	7	2	6	3	5	8	9	3	2	7
9.	15	17	11	13	14	15	13	15	13	12
	6	8	5	8	9	8	4	9	6	8
10.	14	11	16	13	13	11	16	12	15	17
	7	8	9	7	9	4	7	9	7	9

Subtraction Test

Subtract. Write the answers only.

	a	b	c	d	e	f	g
1.	89	89	89	$77	79	$.76	99
	36	25	53	42	37	.54	24
2.	56	$45	84	38	22	89	$.43
	20	30	40	20	10	70	.30
3.	69	$56	44	$.68	65	93	62
	59	36	24	.28	15	83	32
4.	$19	78	99	68	$.58	89	27
	15	73	96	62	.55	83	22
5.	67	89	97	26	77	39	49
	4	7	3	4	5	2	4

Test on Number Stories

6. How much less is a quarter than $.75?

7. Jack had $.35 in his bank. He put in $.12 more. How much did he have in the bank then?

8. Before vacation Bobby weighed 62 pounds. After vacation he weighed 69 pounds. How many pounds did he gain during the vacation?

9. What is the answer in subtraction called?

*10. George counted all the pupils in his room and found there were 37. Then he counted the girls and found there were 23. George then found how many boys there were without counting. Show how he found the answer.

Canning Fruit

Sally helped her mother with the canning last summer. Each night she told her father how much they had done that day.

1. One day they canned 25 quarts of cherries in the morning, and 13 quarts of cherries in the afternoon. They canned how many quarts of cherries that day?

2. They used the strawberries out of their own garden so they made only a few jars of jam at a time. On Monday they made 7 jars, on Tuesday they made 2, on Wednesday they made 4. How many jars of strawberry jam did they make?

3. Sally's father bought 30 pounds of grapes. Twenty pounds were used to make grape jelly. How many pounds were left to use for jam?

4. Sally's mother bought 25 pounds of sugar on Monday to use in canning. On Friday, 5 pounds were left. How many pounds of sugar had been used in canning that week?

***5.** Make a good number story about canning.

Jim's Birthday Party

At Jim's birthday party his mother passed around a small jar filled with marbles. She told each one to guess the number of marbles and to write his guess with his name on a slip of paper. The one who guessed the nearest to the number got the jar of marbles for a prize. Jim did not guess.

The exact number of marbles in the jar was 99. Here are the guesses:

John	Harry	Dan	Edward	Ned	Ralph	Joe
41	63	75	96	54	87	79

Who got the prize?

How near did each boy come to guessing correctly?

99	99	99	99	99	99	99
41	63	75	96	54	87	79

Today Is Bank Day

Each Tuesday is bank day at the Adams School. The children may bring their money to school and deposit it in the school savings bank. The teacher writes the amount of the deposit in the bankbook of each child who deposits money. The teacher sends the money and deposit slips to the bank.

How many cents does each child in this third grade deposit?

1. May deposits a dime.

2. John brings a nickel and 2 pennies to deposit.

3. Bill deposits a dime and a nickel.

4. Mary deposits a dime and 2 pennies.

5. Sam deposits 2 dimes.

6. Tom deposits a nickel, a dime, and a penny.

7. Nancy deposits 2 nickels.

8. Who deposited the largest amount of money?

9. Who deposited the smallest amount of money?

10. Who deposited more money on this bank day, Bill or Tom?

11. Which children brought the same amounts of money?

***12.** Write the names of the children and the amount each one deposited in the order of the amounts deposited. Place the name of the one who deposited the least first and so on down to the one who deposited the most.

***13.** Find how much the children in this third grade deposited altogether?

Keeping in Practice

Do what the signs tell you. Write the answers.

	a	b	c	d	e	f
1.	35 +41	17 +60	85 −23	51 +55	93 −53	87 −51
2.	64 +62	95 −85	84 −21	92 +93	37 +51	42 +41
3.	64 −12	88 −84	68 +21	81 + 7	97 − 5	77 −47
4.	21 +52	79 −59	86 −74	16 +90	23 +54	75 −42
5.	77 −24	25 +63	41 +33	28 −25	73 +72	67 −20

	a	b	c	d
6.	14−9=	6+8=	8+5=	15+6=
7.	8+9=	13−4=	15−8=	9+7=

8. Ann had 18 spelling words in her weekly test. She had 15 right. How many words did Ann miss?

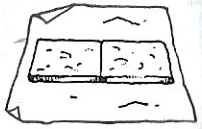
9. There are 13 boys and 5 girls in a class. There are how many more boys than girls in this class?

10. Tom has 8 cents. He wants to buy a toy which costs 12 cents. How many more cents does he need?

11. George weighs 69 pounds and John weighs 61 pounds. How much more does George weigh than John?

One-Half of a Whole

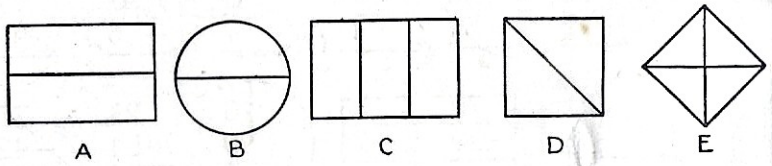
Mary had a candy bar to share equally with Jack. She cut the bar into two equal parts. Mary said, "Here is your half, Jack."

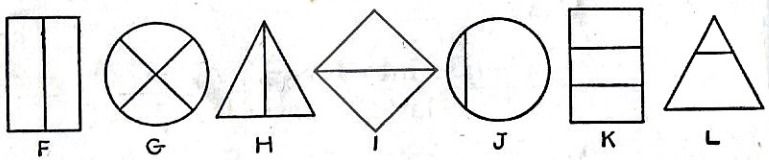


When a whole is divided into two equal parts, each part is called one-half. This is the way one-half is written: $\frac{1}{2}$

There are how many halves in a whole thing?

1. Which of the pictures below shows halves?





2. Fold a piece of paper to show $\frac{1}{2}$ of it.

3. Cut a piece of string to show $\frac{1}{2}$ of it.

4. Show by drawing pictures of the following how a whole thing may be divided into halves.

a cooky	a candy bar	a pie
a doughnut	an apple	a cake

5. A pint is what part of a quart?

6. Draw a square and color $\frac{1}{2}$ of it.

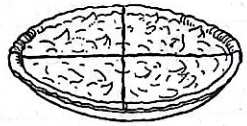
7. One whole equals how many halves?

This is the way two halves is written:

two halves or $\frac{2}{2}$

One-Fourth of a Whole

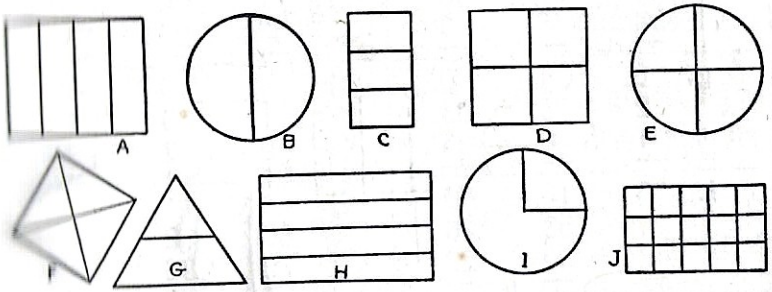
Sally's mother cut the apple pie that she baked into four equal parts like this. Each equal part or piece of the pie is one-fourth of the pie.



One-fourth is written $\frac{1}{4}$.

How many fourths are there in a whole thing?

1. Which of the pictures below shows fourths?



Cut a piece of paper into halves. Again cut each part into halves. Now lay the parts together.

2. Into how many equal parts have you cut the paper?

3. What is each part called? What are two of the equal parts called?

4. Place two of the pieces of paper side by side. What part of the whole paper do you have now?

Two-fourths $(\frac{2}{4})$ is the same as one-half $(\frac{1}{2})$.

5. Three of the four equal parts are called three-fourths $(\frac{3}{4})$.

6. What are four of the parts called?

7. Draw a square and color $\frac{1}{4}$ of it.

8. Draw a circle and color $\frac{2}{4}$ of it.

Testing Your Progress

Try to work and check each test in the time given.

Addition: (Time after copying, 4 minutes.)

a.	43	53	72	**b.**	20	60	80
	56	34	25		48	33	16
c.	78	34	59	**d.**	20	40	10
	20	50	40		70	40	80
e.	35	71	43	**f.**	7	6	5
	4	8	6		52	90	83
g.	6	4	0	**h.**	4	8	5
	2	5	3		1	0	4
	1	0	5		9	7	6
i.	35	16	40	**j.**			
	20	53	26		86	92	72
	42	30	20		72	86	63

Subtraction: (Time after copying, $2\frac{1}{2}$ minutes.)

a.	87	95	78	**b.**	89	76	53
	63	43	16		30	40	20
c.	48	97	89	**d.**	80	90	70
	45	92	86		20	60	50
e.	47	69	98	**f.**	75	67	81
	6	5	2		15	37	71

Standards

	Excellent	Good	Fair	Poor
Addition	30 right	25 to 29	20 to 24	Fewer than 20
Subtraction	18 right	15 to 17	12 to 14	Fewer than 12

Progress Test on Number Stories

(Time, 8 minutes)

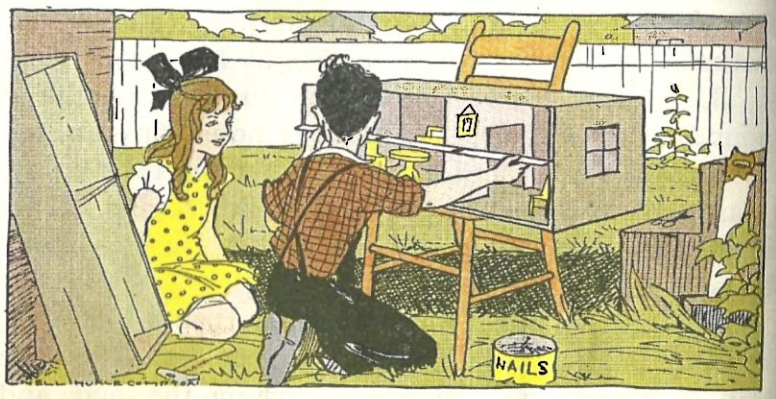
1. Jane paid 49¢ for a cake and 50¢ for ice cream for her mother. How much did both of them cost?
2. Fred spent two days at the lake. He caught 3 fish Friday, 6 fish Saturday morning, and 6 fish Saturday afternoon. In all he caught how many fish?
3. Sam weighs 58 pounds and his sister weighs 35 pounds. Sam weighs _____ pounds more than his sister.
4. When Joan and Ted were planning their party, Joan said, "We have asked 8 boys and 13 girls. If we invite _____ more boys there will be just as many boys as girls at our party."
5. Eight inches is how much less than a foot?
6. Ben asked for a dozen brown cookies. The clerk said, "I have only seven left." "Give me the seven and _____ white cookies to make up a dozen," said Ben.
7. Dick said, "We have 2 more days this week, 7 days next week, and 3 days the week after that before school begins. That's how many days in all?"
8. Thomas is 49 inches tall and Peter is 42 inches tall. What is the difference between their heights?
9. A half dollar and a quarter equal how many cents?
10. Billy swam 50 yards and Ralph swam 75 yards. How much farther did Ralph swim than Billy?

Standards

Excellent	Good	Fair	Poor
9 or 10 right	7 or 8 right	6 right	Fewer than 6

CHAPTER II

Jane's Doll House



Billy used a wooden box to make a one-story doll house for his little sister, Jane. Then Jane wanted an upstairs of about the same size for her house.

Billy measured the doll house with a yardstick. The house was a yard, 3 feet, or 36 inches long; a foot, or 12 inches high; and 15 inches wide.

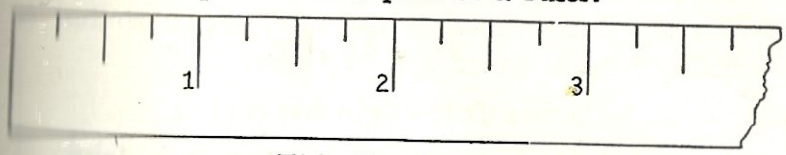
He found another box that he thought was the right size. It measured just a little more than 34 inches long. Was the length of this box more or less than the length of the doll house?

The new box was 10 inches high and 12 inches wide. Could Billy use this box for the second story? Why?

What besides a yardstick could Billy have used to measure the boxes?

The Inch

Here is a picture of a part of a ruler.

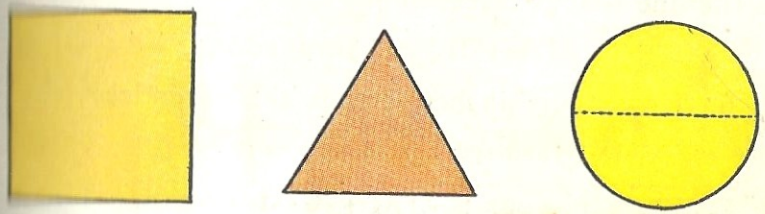


_____ This line is one inch long.

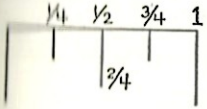
Find the 1-inch mark on the ruler, the 2-inch mark, the 3-inch mark.

Use your ruler to draw a line 1 inch long; 2 inches long; 3 inches long.

Count the number of inches on the ruler.



How long is this square? How wide is it?
How many inches is it around the square?
How long is each side of the triangle?
How many inches is it around the triangle?
How long is the dotted line across the circle?



This line is 1 inch long. Point to the $\frac{1}{2}$-inch mark, the $\frac{1}{4}$-inch mark; the $\frac{3}{4}$-inch mark.

a _____
b _____
c _____
d _____

How long is line a? line b? line c? line d?

Try to tell the length of line a in another way.

$\frac{1}{2}$ inch is the same as $\frac{2}{4}$ inch.

Measuring Length

1. Use a ruler to draw a straight line 1 foot long. How many inches long is the line? A ruler that is 12 inches long is called a *foot ruler.*

1 foot (ft.) = 12 inches (in.)

2. Use a foot ruler to draw a line 2 ft. long.

3. Draw a straight line 3 ft. long on the blackboard.

4. Use a yardstick to draw a line 1 yard long.

5. Is the line that is 1 yard long the same length as the line that is 3 feet long?

3 feet (ft.) = 1 yard (yd.)

6. How many inches long is the yardstick?

1 yard (yd.) = 36 inches (in.)

7. Without your ruler, try to draw a line 1 foot long. Measure with your ruler to see whether your line is too long, too short, or just right.

8. Draw a line which you think is 2 feet in length; a yard long; 3 feet long. Then measure your lines.

9. If a line is more than 2 feet long and less than 3 feet long, you may tell its length in feet and inches.

Which Would You Use?

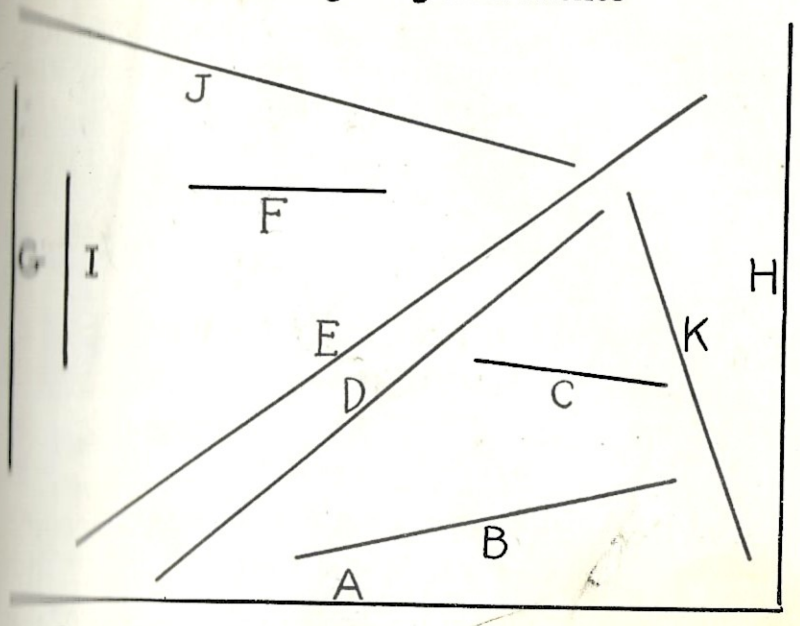
Would you use inches, feet, or yards to measure:

a. The length of paper for making a little basket?

b. The distance you have jumped?

c. The width of your notebook?

Measuring Length in Inches



1. Measure line F. Then without measuring, tell what other lines above you think are the same length as line F. Measure to see if you are right.

2. Which of the three lines looks longest, line I, line F, or line C?

3. Turn your book sideways. Now which of these lines looks longest?

4. Write on your paper what you think is the length in inches of each line above. Mark your answers with the right letters. Then measure to see if you are right.

5. Without measuring, draw a line 2 in. long; 5 in.; 4 in.; 6 in.; 9 in.; 3 in. Measure each line.

To Keep in Practice

There are only two examples of each kind below. Show that you really know how to work each kind by getting all answers right on your paper.

Subtraction

	a	b	c	d	e	f
1.	15	13	89	98	72	89
	6	8	36	52	20	50
2.	97	89	70	90	36	87
	94	83	30	70	4	5
3.	97	56	44	62	14	37
	47	26	4	2	10	30

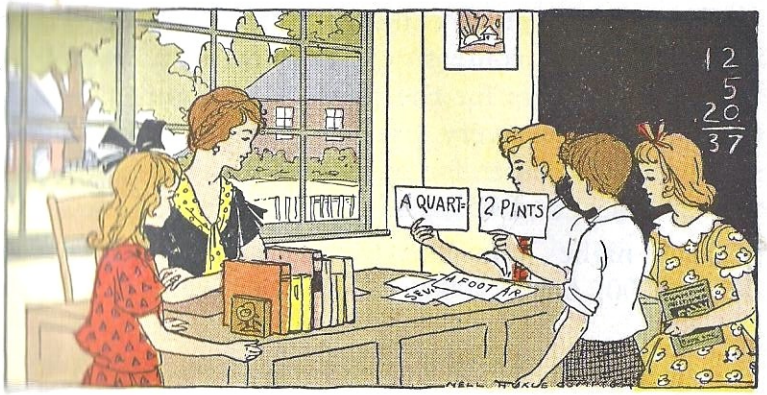
4. Subtract: \$15 from \$75. **5.** \$87 − \$53.

Addition

	a	b	c	d	e	f
6.	7	8	33	23	40	20
	9	7	65	64	58	70
7.	58	64	95	76	7	3
	30	20	4	3	82	62
8.	2	3	6	0	9	4
	4	2	0	7	0	3
	2	1	1	0	7	8
9.	24	40			43	23
	54	14	88	74	54	31
	10	22	91	85	32	63

10. Add: 25¢; 12¢, and 51¢. **11.** 45 + 23 + 40.

A Matching Game



Bob is showing a matching game that he made.

On your paper write everything under A below. Then under B, find what belongs after each equal sign, and write it on your paper.

For example: **1.** Twelve months = one year.

A	B
1. Twelve months =	***a.*** a dime
2. A quarter =	***b.*** 5 nickels
3. A quart =	***c.*** a yard
4. A half dollar =	***d.*** 2 quarters
5. Seven days =	***e.*** a week
6. Twelve inches =	***f.*** a year
7. A whole thing =	***g.*** 2 halves
8. Two nickels =	***h.*** 2 pints
9. A dozen =	***i.*** a foot
10. Three feet =	***j.*** 12 things

Counting Votes

Some fourth-grade children are trying to win a pony in a newspaper contest. John is helping his brother Will to get orders for the paper. Will gets 1000 (one thousand) votes every time he gets an order to send some one the paper for a year; 500 votes for each 6-month order; and 75 votes for each 1-month order.

Last night John had to count 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000 votes for 1-year orders.

He had only one 6-month order.

He had only one 1-month order.

9,000 is read: "Nine thousand."
500 is read: "Five hundred."
75 is read: "Seventy-five."
9,575 is read: "9 thousand, 5 hundred 75."

Write and Read These Numbers

604 = Six hundred four
4000 = Four thousand
2400 = Two thousand, four hundred, or 24 hundred
3870 = Three thousand, eight hundred seventy
6148 = Six thousand, one hundred forty-eight
8093 = Eight thousand, ninety-three
7204 = Seven thousand, two hundred four
3001 = Three thousand, one

Reading and Using Numbers

Some Things for You to Find Out

Copy these questions on your paper. Leave a space after each question for your answer.

1. What is the *date* (day and month) of your birthday? In what year were you born?
2. On what day of the month are you reading this?
3. What is the *address* of your home? (Write the number of your home and the name of the street or your rural delivery number.)
4. What street or road crosses your street or road nearest your home?
5. What is your telephone number?

Some Numbers for You to Read

6. July 4, 1938, is read: July fourth, nineteen thirty-eight. The year may also be read: nineteen hundred thirty-eight; or one thousand, nine hundred thirty-eight.
7. The license number on an automobile, 985-406, is read: nine eight five, four o six.
8. Joe's telephone number is: Green, two nine o eight.
9. Read 1940 in three different ways.
10. How would you read this telephone number: Hazel 2940?

Read these numbers:

	a	b	c	d	e	f
11.	$.01	$1.01	$250	$75.00	$75	$.75
12.	2408	$1890	$4040	3094	2618	3007

Learning More About Numbers

Ida has a dime and a cent in one bank, 3 cents in another, and a dime and a nickel in her bag. How much money has she altogether?

11¢ 3¢ 15¢ 29¢	To find out how much money she has, Ida writes the numbers in a column as shown. Add the ones first: 1, 4, 9. Write 9. Then add the tens: 1, 2. Write 2. Ida has 29 cents.

Each week the third-grade boys and girls have a banking day. Ned had these numbers to add:

5¢ 10¢ 4¢ 19¢	Add the ones first: 5, 9. Write 9. Then add the tens; as there is only a 1 in tens' column, bring down the 1. His sum was 19 cents.

Copy these examples carefully. Be sure to make your columns so that ones are under ones, and tens under tens. Add down, first ones, then tens.

Check by adding up, first ones, then tens:

	a	b	c	d	e	f	g	h
1.	12	17	15	4	21	3	10	21
	5	20	3	3	6	12	30	5
	20	32	11	21	2	4	50	72
2.	40	10	8	22	53	6	14	2
	20	47	30	7	4	0	5	25
	79	30	50	90	0	73	90	1

Working Number Stories or Problems

Billie wants to buy a taffy apple for 6¢ and a popcorn ball for 5¢. How much must he pay for both?

Every problem has two parts. By reading you find:

First: A part that tells something.
Billie wants to buy a taffy apple for 6¢ and a popcorn ball for 5¢.
Second: A part that asks something.
How much must he pay for both?
When you understand what the problem tells and what the problem asks, you must then decide what to do with the numbers to get the answer.

First read each problem below to find the two parts, then decide what you must do. Work each.

1. Ralph is 8 years old and his little brother is 4. How much older is Ralph than his brother?

2. I saw 2 birds go into our bird house. In a little while, I saw 3 more birds go in. How many birds did I see go in?

3. The storekeeper said to Ann, "The ball is 10¢ and the ice-cream cone is 5¢." How much must Ann pay for both?

4. In a race the Red's score was 8 and the Blue's score was 17. What was the difference in their scores?

*5. How much more does a 48¢ doll cost than a 25¢ doll? (The parts are together. Try to find each.)

Keeping in Practice

Work these problems:

1. Bobby has 12¢, Cliff has 14¢, and Jack has 23¢. How much have the boys altogether?

2. Tony wants to buy a box of pencils for 25¢, a box of crayons for 12¢, and a kite for 10¢. How much does he need for all three things?

3. This week James put 14 cents in his bank on Monday, 9 cents on Tuesday, and 11 cents on Thursday. How many cents did he put in his bank this week?

4. Jerry said, "I paid 10¢ for a kite, 10¢ for a ball, and 65¢ for a book. How much did I spend?"

Add and check by adding up:

	a	b	c	d	e	f	g	h
5.	24	42	25	21	56	22	37¢	6
	13	24	12	16	30	42	21¢	10
	42	33	82	82	52	34	40¢	82
6.	27	36	25	32	14	11	3¢	5
	10	32	43	64	71	34	11¢	10
	61	40	51	22	20	52	24¢	3
7.	40	25	60	14	61	43	4	21
	27	31	25	25	10	14	11	4
	31	42	22	50	23	31	3	3
8.	16	18	23	15	23	12	32	56
	40	30	44	42	44	46	12	2
	41	61	50	31	51	30	4	20

Interesting Problems

First read each problem below to find:

a. What does the problem tell?
b. What does the problem ask?
c. Then decide what to do to find the answer.

1. Jean had saved 74 cents. Uncle John gave her 23 cents more. How many cents did she have then?

2. Roy had 76¢. He spent 40¢ for a birthday present for his mother. How many cents did he have left?

3. Dan had 14 baby chickens. His father gave him 5 more. How many baby chickens did he have then?

4. Billy's father is 67 inches tall and Billy is 34 inches tall. How much taller than Billy is his father?

5. James had 15 marbles in his pocket. He gave 6 of them to his brother. How many marbles did he have left in his pocket?

6. Joe was looking for eggs. He found 4 in one nest, 3 in another, and 6 in another. How many more or fewer than a dozen did he find?

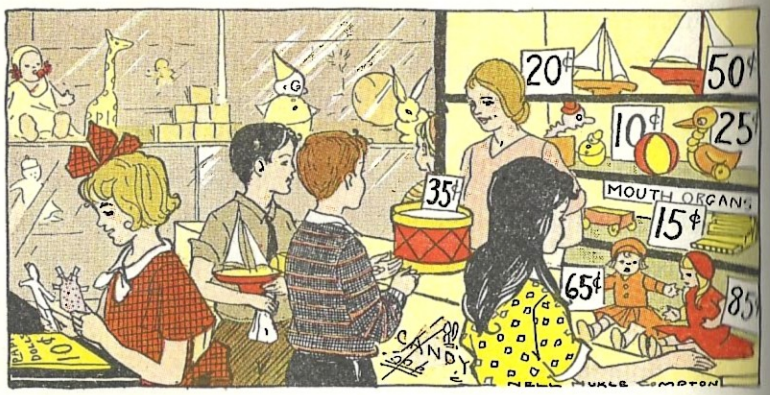
7. Laura said, "I need 14¢ for a pencil and tablet. I have 8¢." How many more cents does she need?

8. Nine boys and 5 girls were invited to a party. How many children were invited to the party?

9. May has 14¢ and Nan has 9¢. How many more cents than Nan has May?

10. John had 16 papers to sell. He still has 9 to sell. How many has he sold?

The Candy and Toy Shop



1. Archie wants to buy a drum that is marked 35 cents, but he has only 23 cents. How much more money does he need?

2. Helen is trying to decide between two dolls. One doll costs 65 cents; the other one costs 85 cents. What is the difference in cost?

3. George picked out a 10-cent ball, a 20-cent sailboat, and a nickel's worth of candy. What did he pay for all?

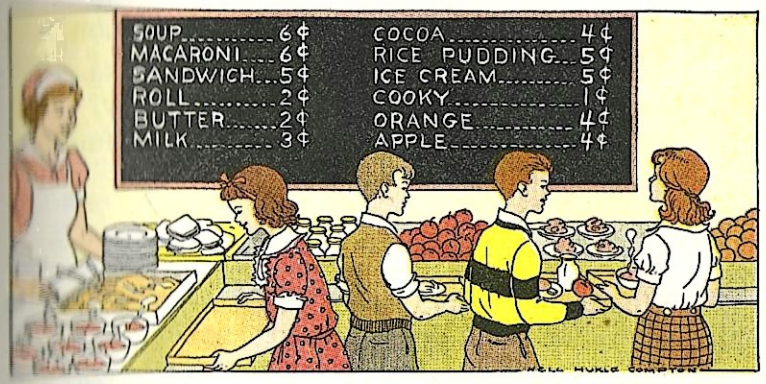
4. Frank bought a mouth organ for 15¢ and gave the clerk a quarter. How much change did he get?

5. Dora wants to buy a set of paper dolls for 10 cents, and 3 cents' worth of candy. How much change should she get from a quarter?

6. How much more does the 50¢ sailboat cost than the 20¢ sailboat?

7. Make up 3 problems about toys in the picture. Be sure that you can work your problems.

The Lunch Room



The children of Liberty School eat in the school lunch room.

1. Today Mary had soup, a sandwich, and an apple. How much did Mary's lunch cost?

2. Jim had milk, a roll, butter, and an apple. How much did Jim pay for his lunch?

3. Tom had cocoa, macaroni, and a cooky for his lunch. How much did Tom spend for his lunch?

4. Betty ordered a sandwich, milk, an orange, and a cooky. She paid 14 cents for her lunch. Was that correct?

5. Make your choice of three things for lunch. How much money would you need?

6. Would the lunch cost more or less than Jim's?

7. How much less did Jim's lunch cost than Tom's?

*8. Whose lunch cost most: Mary's, Jim's, Tom's, Betty's, or yours?

Families in Arithmetic

There is a number family for each addition fact you have learned. If you know the families, they will help you to get the right sums quickly. The first family shown below is "the 2 and 3 family."

Study these carefully:

$2+3=5$ $12+3=15$ $22+3=25$

1. What families do you see in the row of examples below?

2	12	22	2	12	22	3	13	23
3	3	3	4	4	4	5	5	5
5	15	25	6	16	26	8	18	28

In the example 2b below, you see that the answer is 15, without stopping to add first the ones and then the tens. Write the 15 on your paper quickly, and go on to the next example.

Write all the sums on your paper:

	a	b	c	d	e	f	g	h	i
2.	3	13	23	4	14	5	15	6	16
	2	2	2	2	2	2	2	2	2

What answers should follow?

3. Three and 2 =
Thirteen and 2 =

4. Four and 3 =
Fourteen and 3 =

5. Five and 3 =
Fifteen and 3 =

6. Four and 5 =
Fourteen and 5 =

7. Seven and 2 =
Seventeen and 2 =

8. Six and 3 =
Sixteen and 3 =

Addition with Arithmetic Families

1. Start with each number from 0 to 9, and count by 10's in this way: 0, 10, 20, 30, 40, etc., to 90; or 1, 11, 21, 31, 41, etc., to 91.

2. When you start with 3 to count by 10's, what figure comes in one's place in each number? When you start with 4? When you start with 6?

3. Get each answer below without using a pencil:

	Adding down, think: 4 and 5, 9; 14 and 5, 19					Adding up, think: 5 and 4, 9; 15 and 4, 19				
a.	4	14	24	34		**e.**	4	4	4	4
	5	5	5	5			5	15	25	35
	9	19	29	39			9	19	29	39
b.	3	13	23	33		**f.**	3	3	3	3
	6	6	6	6			6	16	26	36
	9	..9	2.	..			9	..	..	..
c.	5	15	25	35		**g.**	5	5	5	5
	4	4	4	4			4	14	24	34
d.	6	16	26	36		**h.**	6	6	6	6
	3	3	3	3			3	13	23	33

4. Choose any two numbers whose sum is less than 10, and make examples like those above.

Read across, and give the sums:

	a	b	c
5.	5 and 3 =	15 and 3 =	25 and 3 =
6.	2 and 6 =	12 and 6 =	42 and 6 =
7.	3 and 4 =	13 and 4 =	33 and 4 =

Harder Column Addition

1. Think ten. Add to it each of the following numbers: 3, 4, 0, 1, 2, 5, 9, 8, 7, 6.

2. Add, and check your answers by adding up:

1	2	4	7	6	9	5	8	3	4
9	8	6	3	4	1	5	2	7	6
0	3	8	4	2	1	7	9	5	6

3. Think thirteen. Add to it each of the following numbers: 2, 5, 3, 6, 4, 1, 0.

4. Add, and check your answers by adding up:

5	6	9	7	5	4	8	7	9
8	7	4	6	8	9	5	8	8
2	5	3	6	0	4	1	4	0

5. Think twelve. Add to it each of the following numbers: 7, 5, 6, 3, 4, 0, 2, 1.

6. Add, and check your answers by adding up:

3	7	4	6	5	8	9	7	5
9	5	8	6	7	4	3	5	9
2	0	3	5	4	7	6	1	4

7. Bob lives in a small town where he has room for pets. He has one Shetland pony, 2 dogs, 3 rabbits, and 5 pigeons. How many pets has he?

8. Mary received a box of candy for her birthday. She counted 3 pink, 2 green, 5 chocolate pieces, and 1 silver covered piece, all on the top layer. How many pieces of candy were on the top layer?

Work Without Pencils

1. There were 23 children in the third grade when school began this fall, but 4 children have entered since. How many children are in the third grade now?

Study the following examples; try to get the right answers without using a pencil. Read across the page.

	a	b	c	d
2.	3+5=	13+5=	23+5=	33+5=
3.	4+3=	14+3=	24+3=	34+3=
4.	2+5=	12+5=	22+5=	32+5=

Give the answers of the examples below:

5.	31 and 8=	11 and 7=	14 and 4=	38 and 1=
6.	25 and 4=	29 and 0=	15 and 3=	18 and 1=
7.	10 and 8=	11 and 1=	10 and 0=	19 and 0=
8.	20 and 9=	35 and 2=	20 and 7=	21 and 8=
9.	24 and 3=	22 and 7=	23 and 5=	24 and 3=
10.	23 and 4=	27 and 2=	15 and 1=	16 and 0=

Blackboard Chart A, for Oral Practice

Practice: To each number in row A, add first the number below it; and then add to each number in row A any number to the left of it in row B.

For example: 12 + 7 = ? 12 + 5 = ? 12 + 3 = ? 12 + 6 = ?

A:	19	18	17	16	15	14	13	12	11	10
B:	0	1	2	3	4	5	6	7	8	9

Oral Problems and Practice

1. Jack had 14 marbles. He bought 5 new ones today. How many marbles has he now?

2. In Sue's classroom there were 41 story books. Today Ted brought five more. How many story books were in the room then?

3. Alice chose 14 cents' worth of candy, and then said, "And I'll take a 5-cent candy bar." How much money did she spend for candy?

4. After Ann had chosen 16 cents' worth of candy, she asked the clerk to put back a 5-cent bar. How much money must she pay for the candy that she bought?

5. How much money are 2 nickels? 3 dimes? 4 nickels? 3 nickels? 5 nickels? 2 dimes?

6. Count by 5's to 50. By 10's to 100.

See how quickly you can make these additions. Check your work as you go along.

	a	b	c	d	e	f	g	h
7.	3	7	8	6	6	5	8	5
	9	9	9	9	7	9	7	8
	7	3	1	4	5	2	0	4
8.	9	7	8	4	6	9	9	4
	7	8	5	9	8	8	5	6
	3	2	4	2	5	2	4	8
9.	3	2	5	4	2	5	7	2
	5	7	2	5	6	3	1	4
	6	3	6	7	4	7	3	6
	3	6	3	2	5	2	6	3

Using Addition Families

Write the sums. Check.

	a	b	c	d	e	f	g	h
1.	1	1	1	3	5	1	1	1
	1	2	5	2	4	6	7	8
	8	7	4	8	8	3	2	1
	2	1	5	1	1	6	7	8
2.	4	4	2	1	2	2	3	1
	4	1	1	3	3	2	3	4
	8	6	8	6	7	8	8	5
	1	3	1	3	2	1	1	4

Write these numbers in columns, add, and check:

	a	b	c
3.	4, 3, 7, 2	5, 1, 5, 4	7, 2, 0, 4
4.	6, 1, 4, 5	4, 0, 7, 2	9, 8, 2, 0

Problems

5. At the circus Betty saw six monkeys in one cage, five in another, and eight in another. How many monkeys did she see in the three cages?

6. On his grandfather's farm, Joe counted 8 trees in the front yard, 5 in the back yard, and 6 behind the barn. How many trees did Joe count?

7. Some boys came across the lake in three boats to see us last summer. Mother said, "Tell me how many there are so that I can make enough lemonade for all of you." There were 7 boys in one boat, 6 in another, and 5 in the third boat. What number should I have told Mother?

Nancy's Chickens

1. Nancy's mother gave her 6 chickens, and her uncle gave her 9. With the money that she got for eggs, Nancy bought 4 chickens from Mr. Smith. How many chickens had she then?

2. Nancy's father told her that the storekeeper would pay more for eggs which were all the same size and color. So Nancy used four baskets to put the eggs in. Each day she wrote down the number of each kind that she gathered. This is the way she kept the numbers separate:

	Big white eggs	Big brown eggs	Small white eggs	Small brown eggs
Sun.	0	5	4	6
Mon.	7	2	0	4
Tues.	5	4	3	5
Wed.	6	5	4	2

How many eggs did Nancy have in each basket Wednesday night? How many eggs did she get Sunday? Monday? Wednesday? Tuesday?

Checking What You Know

On your paper, number your answers and write what is needed to fill each blank below:

1. A quarter = _____ ¢.
2. 1 yard = _____ ft.
3. 2 pints = _____ qt.
4. 1 week = _____ da.
5. 1 foot = _____ in.
6. 1 dozen = ___ things.
7. 1 yard = _____ in.
8. 1 year = _____ mo.
9. 1 dime = ___ nickels.
10. 1 half dollar = ___ ¢.

11. Copy these examples, putting in the right signs:

a.	8 . . 9 = 17.	f.	13 . . 8 = 5.	k.	8 . . 5 = 3.
b.	6 . . 5 = 11.	g.	15 . . 6 = 9.	l.	13 . . 4 = 9.
c.	24 . . 13 = 37.	h.	5 . . 9 = 14.	m.	9 . . 7 = 16.
d.	16 . . 7 = 9.	i.	15 . . 7 = 8.	n.	14 . . 14 = 0.
e.	29 . . 5 = 24.	j.	7 . . 9 = 16.	o.	7 . . 0 = 7.

If your teacher let the class have an addition race using Charts A and B, how many sums do you think you could give for your side before the other side could catch you in a mistake?

Blackboard Chart B, for Oral Practice

Practice adding to each number in row A, first, the number just below it, and then, one by one, the different numbers to the left of it in row B.

For example: 29 + 0 = ? 21 + 8 = ? 21 + 5 = ? 21 + 7 = ?

A:	29	28	27	26	25	24	23	22	21	20
B:	0	1	2	3	4	5	6	7	8	9

Buying Candy After Lunch

1. Neil bought 2 lollipops. Both cost him ___ ¢.

2. Ed bought 4 candy eggs. He paid ___ ¢ for them.

3. Frances bought a candy bar for Jean and one for herself. She paid ___ ¢ for them.

4. How much must Ellen pay for 5 mints?

5. Spencer had a nickel. Did he have enough money to buy 3 candy eggs?

The girl who takes the money knows that:

3 two's are 6.	2 three's are 6.
2 four's are 8.	4 two's are 8.
3 three's are 9.	2 two's are 4.
2 five's are 10.	5 two's are 10.
2 one's are 2.	5 one's are 5.

Blackboard Chart C, for Oral Practice

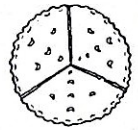
Practice adding to each number in row A, first the number below it, and then each number to the left of it in row B.

For example: $34+5=?$ $34+3=?$ $34+0=?$

A:	39	38	37	36	35	34	33	32	31	30
B:	0	1	2	3	4	5	6	7	8	9

Learning About Thirds

Helen and Jean came home from school with Edna, and Edna's mother said the girls might have one of the little pies that she had baked.

When the pie was cut, it looked like this: 

Into how many equal pieces was it cut?

Each piece was one-third of the whole pie.

When anything is divided into 3 equal parts, what is each part called?

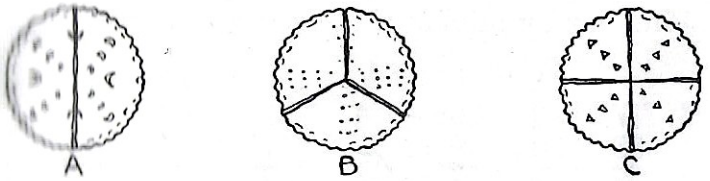
Write one-third in figures this way: $\frac{1}{3}$.

While the girls were eating the pie, Jack came home and asked, "Mother, may I have some pie, too?"

"Yes, Jack," his mother said, "I'll cut this other little pie into thirds, and you may have one piece."

When Jack's mother cut the pie into thirds, how many pieces were there? What part of the whole pie was Jack's piece? How many thirds of a pie equal a whole pie?

Write three-thirds in figures this way: $\frac{3}{3}$



Here are three pies of the same size.

The first pie is marked A. It is divided into ___.

The second pie is divided into how many equal parts? And the third pie into how many? Which pieces are largest? Which are smallest?

Something New in Addition

Fred had 29¢ in his bank. By working in the garden, he earned 16¢ more and put that in his bank, too. How much did he have in his bank then?

29¢ = 2 dimes and 9 cents
16¢ = 1 dime and 6 cents
45¢ = 4 dimes and 5 cents

9¢ and 6¢ are 15¢, or 1 dime and 5¢. Write the 5 under the ones, and carry the 1 dime to the dimes' or tens' column.

1 (dime carried in mind) and 2 are 3, and 1 are
4. Write the 4 under the dimes or tens.
Fred had 45¢ in his bank.

This is a quick way to add two-figure numbers.

25 — 5, 14. Write 4, carry 1.
59 — 1 (carried) 3, 8. Write 8.
84 is the sum.

Find out by adding if these sums are correct:

	a	b	c	d	e	f	g	h
1.	17	19	15	54	42	88	63	16
	35	26	49	67	59	14	77	98
	52	45	64	121	101	102	140	114

Work these addition examples. Check.

2.	29	24	36	43	76	58	69	71
	39	58	29	18	15	25	28	19

Keeping in Practice

Add these numbers as you did those on page 86:

	a	b	c	d	e	f	g	h
1.	17	69	46	78	25	53	66	39
	13	14	91	73	16	18	87	64
2.	59	45	44	38	39	27	23	76
	27	88	79	27	98	36	58	95
3.	36	47	87	57	88	87	74	98
	68	95	59	57	32	18	46	15
4.	49	66	89	78	89	58	67	88
	83	94	25	68	42	36	24	89

5. Ida mailed 14 Christmas cards and she took 23 cards to classmates. How many cards did she use?

*6. In a big barn yard Jim counted 23 cows, 10 calves, 9 big horses, and 5 colts. How many animals did he count?

Add and check:

7.	51	46	3	71	9	33	43	19
	4	46	69	5	89	93	27	20
	93	37	96	77	30	9	80	71
*8.	12	26	84	21	11	45	15	39
	53	29	5	39	68	19	37	86
	14	10	4	84	10	25	20	2
	53	23	45	1	10	30	67	2

Carrying More Than One Ten

Miss Small asked Bob to find how many bottles of milk were needed for the first three grades. Bob got these orders: grade one, 29 bottles; grade two, 25; grade three, 17. How many bottles of milk were needed?

29	Add the ones: 9, 14, 21. Write 1, carry 2.
25	Add the tens: 2 (carried), 4, 6, 7. Write 7.
17	
71	71 bottles of milk were needed.
Check: 7, 12, 21. Write 1, carry 2. 2, 3, 5, 7. Write 7.	

What do you write under ones, and what do you carry to the tens' column, if:

1. The sum of ones' column is 12? 16? 24? 30? 27?
2. The sum of ones' column is 10? 20? 18? 28? 38?

Make these additions carefully:

	a	b	c
3.	15 and 7 are	17 and 5 are	16 and 8 are
4.	8 and 8 are	14 and 9 are	15 and 6 are
5.	14 and 7 are	16 and 7 are	10 and 8 are

	a	b	c	d	e	f	g	h
6.	26	18	18	42	15	38	7	7
	99	49	38	7	59	87	67	19
	7	25	88	98	79	6	97	77

7. Copy neatly in straight columns, add, and check:
   - **a.** 57, 29. 37.
   - **b.** 31, 94, 6.
   - ***c.** 8, 45, 9, 89.
   - ***d.** 99, 8, 89, 7.

Helps in Addition

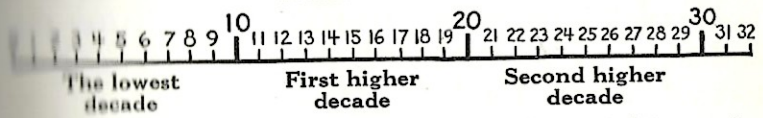
Harry had 18¢. Today he got 7¢ more. How can he tell without counting how many cents he has now? This is how Harry explained it to Dick: "I know 8 and 7 are 15, and the sum of 18 and 7 ends in 5 and has 1 ten more than 18."

8 and 7 = 15 → 18 and 7 = 25 → 28 and 7 = 35

7 and 8 = 15 → 17 and 8 = 25 → 37 and 8 = 45

In arithmetic it is helpful to speak of numbers grouped in tens or *decades*. Look at the number scale below. How many numbers are in a decade?

Number Scale



Add the numbers below. Find 13 and 17 on the scale. Are 13 and 17 in the same decade?

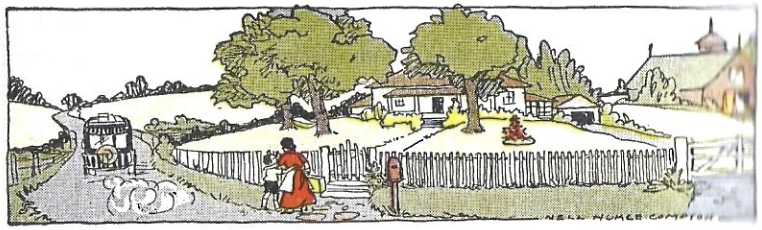
13	25	17	22	24	23	41	90
4	3	2	6	3	5	7	8
17							

Add the numbers below. Find 15 and 23 on the scale. Are 15 and 23 in the same decade?

15	24	19	16	22	23	17	38
8	7	9	7	9	8	8	6
23							

When you add a two-figure number and a one-figure number, the sum is either in the same decade or in the decade just above the two-figure number.

Dan's Vacation



1. During vacation, Dan visited his Aunt Mary for nine days. Then he visited his Uncle Jack for a week. Besides his visits, he spent three days traveling. How many days was he away from home?

***2.** Dan rode on one train from 9 o'clock in the morning until 12 o'clock, noon, and on another from 1 o'clock until 5 o'clock that afternoon. After that he had a two-hour bus ride. "I rode for ____ hours today," he told his Aunt Mary.

***3.** When Dan had ridden on the bus for some time, the driver told him, "You have come only 23 miles on the bus now. Sleepy Hollow, where you get off, is 57 miles from where we started." How many miles more did Dan have to ride?

***4.** At his uncle's, Dan drove the cows to and from the pasture. There were 9 cows from the new barn, 7 from the old barn, and 5 that were kept in the shed. How many cows did Dan have to bring in at night?

***5.** Uncle Jack took Dan and his cousins to a circus at Red Wing which was 29 miles from their farm. On the way, Dan saw a sign "Red Wing 13 miles." How far from the farm were they then?

Using Number Families

Read across and fill in the missing numbers:

	a	b	c
1.	8 and 2 =	18 and 2 =	28 and 2 =
2.	8 and 3 =	18 and 3 =	28 and 3 =
3.	6 and 7 =	16 and 7 =	26 and 7 =
4.	7 and 8 =	17 and 8 =	27 and 8 =
5.	9 and 5 =	19 and 5 =	29 and 5 =

6. Choose an addition family. Tell its story in this way: "The family is $\frac{4}{11}$ (7 and 4, 11), $\frac{4}{21}$, $\frac{4}{31}$, $\frac{4}{41}$."

Add orally from left to right:

7.	8 and 9 =	28 and 9 =	18 and 9 =
8.	26 and 5 =	23 and 9 =	19 and 4 =
9.	12 and 8 =	27 and 8 =	15 and 8 =
10.	27 and 9 =	23 and 7 =	28 and 4 =

11. Helen had 37 stamps. She got 8 more from Mabel. How many did she have then?

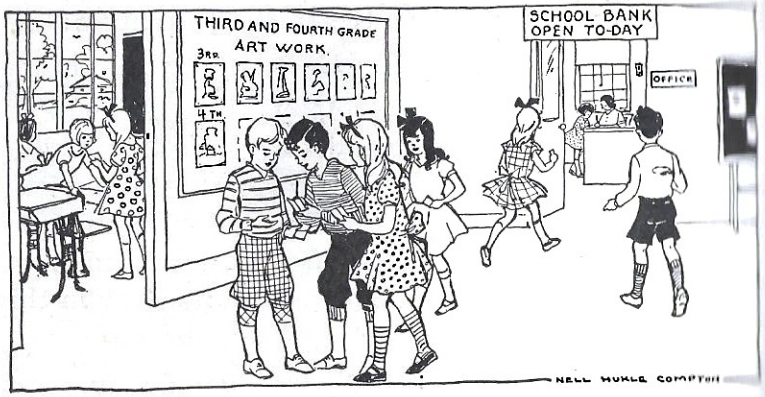
12. Some boys hiked 17 miles one week-end trip and 4 miles on another trip. How many miles did they hike on both trips?

Blackboard Chart D, for Oral Practice

Practice adding to each number in row A, the different numbers in row B. Remember the arithmetic families.

A:	11	12	13	14	15	16	17	18	19
B:	3	5	1	6	8	4	7	2	9

Money in the Bank



In many schools the pupils have school bank accounts. The table below shows how much some children had in the bank and how much each put in the bank the last Friday in September.

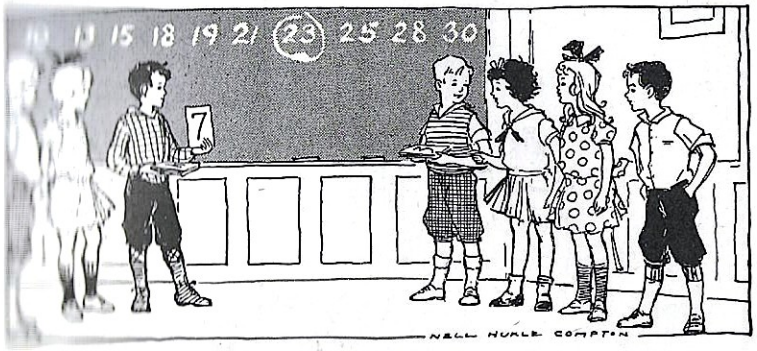
	Had in bank	Put in		Had in bank	Put in
Jimmie	15¢	6¢	Ralph	28¢	6¢
Allan	26¢	9¢	Laura	37¢	8¢
Sara	35¢	8¢	Bessie	36¢	9¢

Find the total in the bank for each child.

Give the sums of these numbers:

	a	b	c
1.	15 and 6	24 and 8	33 and 6
2.	25 and 9	17 and 9	18 and 7
3.	35 and 8	28 and 9	29 and 7
4.	37 and 8	34 and 9	38 and 5
5.	26 and 8	39 and 5	19 and 8

The Lions Race the Tigers



The class chooses two captains, who choose sides. The sides are called the Lions and the Tigers.

What to use: Each side makes 10 cards, about 5 inches wide and 7 inches long. The cards are then numbered from 0 to 9 with big figures. Each captain mixes his cards, face up, in one pack.

Any ten numbers from 10 to 30 are written on the blackboard and you are then ready for the race.

How to race: A captain calls upon a pupil of the other side and says, "Choose your number, Ruth."

If 23 is one of the numbers on the blackboard, Ruth may say, "Put a ring around 23."

Then Ruth tries to add to 23 the number on any card that the captain who called her may show.

If Ruth makes a mistake, either a Lion or a Tiger may step forward, say, "Question!" and give the correct answer. If the Tigers first correct a mistake on their own side, the Lions cannot score. If a Lion first corrects a mistake made by a Tiger, the Lions get a score of 1, and the Lions may have a chance to add.

A School Party

1. The third-grade class invited the second-grade class to a Halloween party. They found that there would be 36 second-grade children, 37 third-grade children, and 14 mothers and teachers at the party. In all they had to plan for how many people?

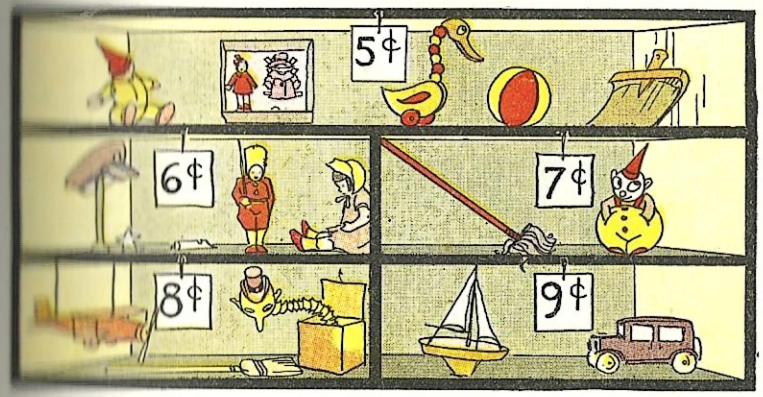
2. Miss Green ordered 48 little white cakes and 48 little brown cakes. Was there a little cake for each person?

3. They bought 5 bricks of pink ice cream and 12 bricks of white ice cream. How many bricks of both kinds did they buy?

Hold the edge of your paper under the examples below. Write only the sums.

	a	b	c	d	e	f	g	h
4.	35	38	72	4	4	80	65	9
	9	7	5	48	46	8	58	30
	89	8	1	6	97	89	7	5

Helping in the Toy Shop



David's mother owns a toy shop. Each of the toys on one shelf sells for 5¢, on another shelf for 6¢, and so on. Play that you are helping David. You must not charge one cent too little or one cent too much.

1. Louise bought a toy broom for 8¢, a dust pan for 5¢, and a mop for 7¢. How much should she pay?
2. Grover asked, "How much do a 5¢ ball, a 9¢ sailboat, and an 8¢ airplane cost?" What is your answer?
3. Joe bought a toy soldier for 6¢, a duck for 5¢, and a sailboat for 9¢. How much should he pay?
4. How much should each of these children pay?

Sara	Tom	Sam	Ella	Sue	Jack	Bob	Jane
5¢	6¢	7¢	8¢	9¢	5¢	6¢	8¢
5¢	6¢	7¢	8¢	9¢	6¢	7¢	9¢
5¢	6¢	7¢	8¢	9¢	7¢	8¢	5¢

5. How many are 3 fives? 3 sixes? 3 eights?
6. Three 7's are how many?
7. What is the sum of 3 nines?

Problems and Practice

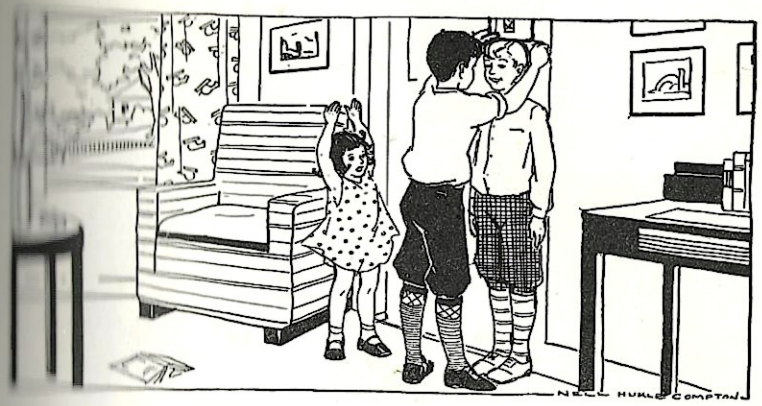
1. At the county fair, Jerry, Tom, and Billy saw three rows of cars parked outside the gate. Each boy counted the cars in a different row. Jerry counted 33; Tom, 27; and Billy, 44. How many cars were there in the three rows?

2. Fred said, "Mother, Father, and I took an auto trip. For 13 days we drove to different places; then we spent 15 days in the mountains, and it took us 3 days to drive home. We were gone how many days?"

Copy these examples. Add, and check.

	a	b	c	d	e	f	g	h
3.	50	65	45	35	80	69	40	70
	35	41	72	70	10	30	30	60
	23	15	20	27	77	90	30	90
4.	8	57	85	40	65	7	69	7
	99	26	57	88	98	89	80	95
	50	68	35	9	30	54	7	8

How Tall Are You?



John and his cousin James are about the same age. Every summer and every Christmas they measure to see how tall each is. This is how John was measured:

John stood up tall with his heels down but against the side of the doorway. James held a book, as you see in the picture, so that it just touched John's head. Then he marked John's height with chalk just under the book.

Using his foot ruler, John held the end nearest the 1-in. mark on the floor, and measured straight up to the mark on the side of the doorway. Each time John measured a foot, James wrote 12 inches. John was 45 in.; or, _____ ft., _____ in. tall.

12
12
12
9
45

James was $46\frac{1}{2}$ in. (46 and one-half inches) tall.

Choose partners. Find how tall you are.

Playing a Number Game

Each choose a number, from 1 to 25, and put it in large figures on a card. Then all stand in a circle or around the wall, each one showing his number. One child says, "I have 7, who will make it 15?" The child who has 8 says, "I have 8. 7 and 8 are 15." Then the child who has 8 continues by saying, "I have 8. Who will make it 25?" The child who has 17 says, "I have 17. 17 and 8 are 25." And so on.

If the class is small your teacher may let each child make two cards, one with a small number on it and one with a larger number.

Make these subtractions:

	a	b	c	d	e	f	g	h
1.	15	13	15	13	14	16	14	17
	6	8	7	4	8	9	5	9
2.	87	96	58	35	43	99	78	97
	32	64	22	3	30	53	45	77

Problems and Practice

1. Bessie's father had been fishing with some other men. Thursday they caught 39 fish; Friday, 73; and Saturday, 58. To see if Bessie knew her arithmetic, her father asked her how many fish they caught in all. What should she have answered?

2. Ben said, "Last summer at Bass Lake Ted caught 98 fish and I caught 65. Ted caught ____ more fish than I, but most of mine were larger."

3. The boys are going to fish next summer. Ben bought a fish pole for 98¢ and Ted paid 89¢ for his pole. They paid 25¢ for fishhooks for both. What did the two poles and the hooks cost?

Add these numbers. Write only the sums and check.

	a	b	c	d	e	f	g	h
4.	$.24	39	26	49	29	17	34	44
	.37	77	83	87	57	66	79	73
	.86	86	99	76	78	84	67	89
	$1.47							
5.	$.36	81	39	27	93	12	56	64
	.89	26	46	23	84	96	47	39
	.74	78	84	46	75	83	86	47
6.	$.96	34	99	42	46	57	42	74
	.87	46	77	24	64	75	84	81
	.79	58	58	38	88	89	89	69
7.	$.49	19	10	86	39	33	44	28
	.27	93	39	68	93	58	57	57
	.72	82	98	95	84	49	79	82

A Page of Practice

Add and check:

	a	b	c	d	e	f	g	h
1.	7	9	7	9	6	7	6	
	6	9	5	4	6	9	8	
	5	3	8	9	9	9	6	
	5	7	1	2	2	2	3	
2.	7	8	9	8	6	5	4	
	8	9	7	3	9	9	7	
	5	6	5	9	8	7	7	
	6	3	6	2	1	4	9	
3.	77	49	58	38	9	82	8	
	5	97	87	53	61	9	9	
	3	22	4	73	56	64	91	
	88	9	23	15	35	36	38	

4. In the Franklin family there are two parents, three sons, and four daughters. How many are in the family?

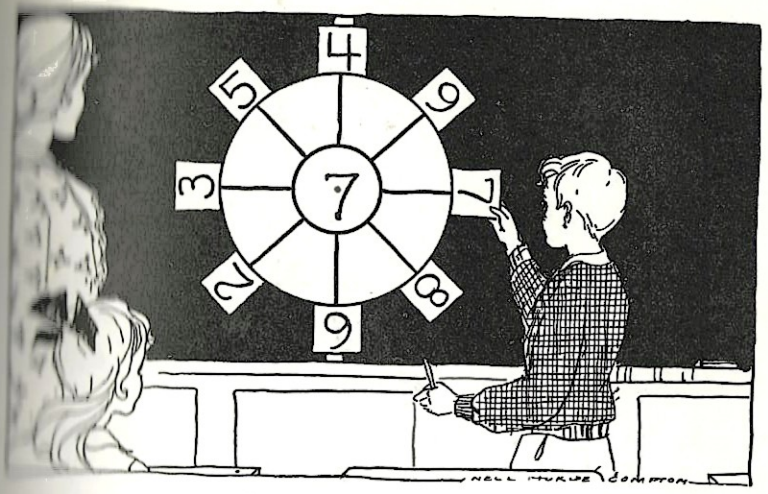
5. In an arithmetic game the Lions made a score of 35 and the Tigers made a score of 78. How many points ahead were the Tigers?

6. Four brothers saved money to buy their mother a present. Edward saved $5, Frank $9, James $9, and Will saved $6. How much did the boys save for their mother's present?

7. Ned has $20 to buy a bicycle that costs $35. He needs how many more dollars?

8. David's oldest brother is 19 years old. David is 8. What is the difference between their ages?

Spin the Wheel



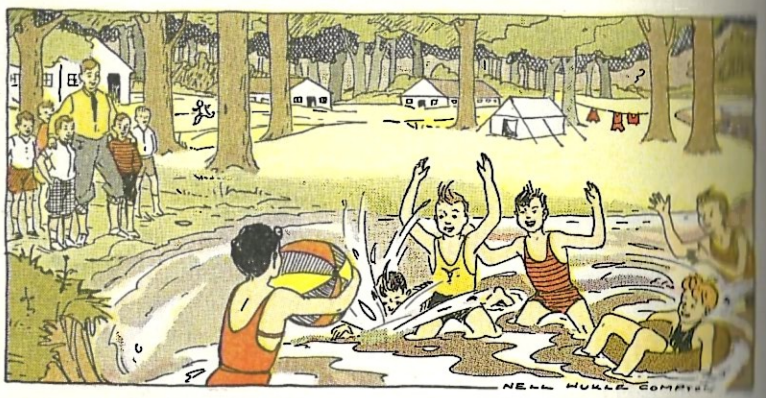
To get ready for a race in column addition, practice adding orally. Add the number at the center to each number on the outside of the wheel. You can spin the wheel by adding quickly first one number and then the next.

Add with each of these numbers at the center:

a	b	c	d	e	f	g	h	i	j
0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39

Now test yourself by writing the sums that you get with some of the different numbers at the center. First spin to the right, starting at the top with $7+4=11$, $7+9=16$, and so on.

Keeping Up Your Skill



1. Eighty-nine boys were at Camp Black Hawk in July. The last week in August only twenty-three of the boys were at the camp. How many had left?

2. Robert counted the people in one part of a parade. There were 48 policemen, 54 sailors, 38 soldiers, and 30 boy scouts. How many people were in that part of the parade?

Write only the sums. Check.

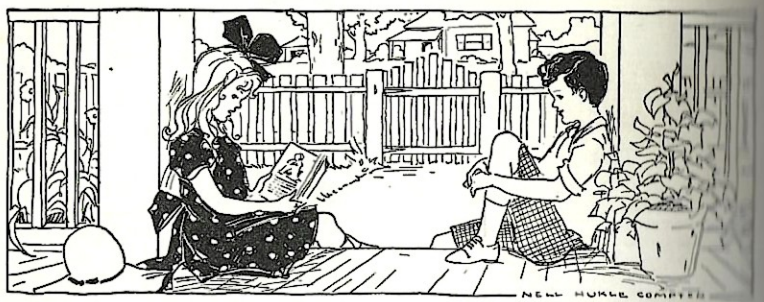
	a	b	c	d	e	f	g
3.	62	69	79	78	57	83	56
	68	82	84	44	59	7	9
	14	15	13	65	21	79	9
	93	58	46	57	88	44	95
4.	59	75	66	48	74	34	8
	78	36	75	95	76	97	7
	70	2	67	12	38	61	68
	9	97	76	84	67	29	96

Checking Up on Addition

First, work and check the test examples in each row below. If you make a mistake, correct your mistake; then work the practice examples in that row.

	Test			Practice				
	a	b	c	d	e	f	g	h
1.	3	47	10	2	73	82	20	24
	60	2	30	70	4	7	30	60
	15	10	50	26	21	10	40	3
2.	15	7	20	14	2	20	2	7
	3	12	5	5	37	9	23	20
3.	3	7	9	5	5	6	9	8
	7	6	8	9	7	8	4	5
	8	5	0	3	5	0	4	5
4.	24	36	77	25	36	57	19	23
	39	49	18	57	35	37	68	47
5.	14	16	38	49	12	46	45	39
	53	24	43	35	67	50	28	35
	42	38	36	43	39	25	12	42
	68	41	52	22	23	18	31	12
6.	18	5	34	25	8	9	23	27
	6	29	7	6	18	25	7	7
7.		7	65		8	46	70	57
	48	43	14	19	27	19	48	36
	18	29	48	38	6	75	33	10
	26	48	89	25	28	80	9	98

Interesting Problems



1. Ralph and Louise are reading a new book aloud. Ralph read 11 pages. Louise read 7 pages. How many more pages did Ralph read than Louise?

2. Ralph is 10 years old. Louise is 8 years old. In how many years will Louise be as old as Ralph is now? How old will Ralph be then?

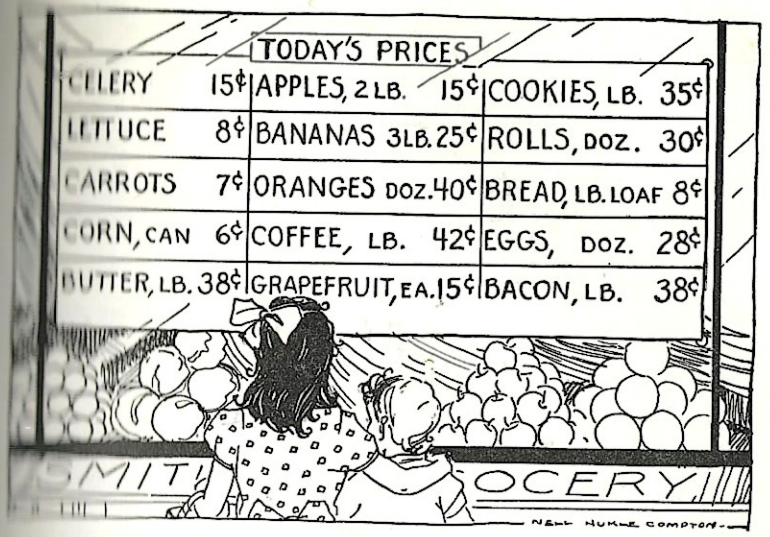
3. The man at the drug store sent 4 pints of ice cream for Mrs. Lee's party. How many quarts was that?

4. Fay's mother gave her 50¢ to buy some things at the store. Fay got 20¢ worth of cheese, 8¢ worth of celery, 15¢ worth of apples. She received 7¢ change. Did Fay get enough change?

5. Mr. Jones bought a grapefruit for 12¢, 3 candy bars for 10¢, and a green pepper for 3¢. What coin will just pay for all that he bought?

***6.** The gasoline in the glass tank at the filling station was up to 10 when the man started to put gas in Mr. Brown's car. When he stopped, the gasoline in the glass tank was down to 3. How many gallons had been put into Mr. Brown's car?

At the Grocery



1. Mary bought 1 can of corn, 1 doz. eggs, 2 bunches of carrots, and 2 lb. of apples. How much did all cost?

2. George has on his list: 3 lb. bananas, 1 doz. rolls, 1 lb. coffee, 1 head lettuce. How much money does he need?

3. Fred asked for a bunch of celery, a pound of butter, a loaf of bread, and 2 grapefruit. How much was his bill?

4. How much must I pay for 1 loaf of bread, 1 lb. of bacon, and 1 doz. eggs?

***5.** How much more would 4 grapefruit cost than a dozen oranges?

lb. means pound or pounds; *doz.* means dozen or dozens.

Adding Three-Figure Numbers

Mr. Walters has two farms. On one he has 312 sheep; on the other he has 285 sheep. The county newspaper is going to print the names of the sheep owners and the number of sheep that each owns. How many sheep does Mr. Walters own?

When you add three-figure numbers, add first the ones, then the tens, then the hundreds.

312
285
597

2, 7. Write 7 under ones.
1, 9. Write 9 under tens.
3, 5. Write 5 under hundreds.
He owns 597 sheep.

Try to work the addition examples below without making any mistakes:

	a	b	c	d	e	f
1.	327	841	246	321	212	426
	442	156	752	675	265	152
2.	147	322	556	438	515	323
	832	567	423	551	322	273
3.	256	407	164	626	543	392
	723	201	322	352	226	407

Keeping in Practice

Write only the sums without wasting time:
Make a little check mark (√) on your paper as in example 1a, if your answer checks.

	a	b	c	d	e	f
1.	325	527	658	315	458	239
	659	369	337	468	529	537
	984 √					
2.	207	508	208	704	436	739
	708	405	400	9	208	255
3.	127	509	26	207	8	334
	225	38	758	739	65	9
	329	208	207	43	624	647
4.	238	28	329	625	528	946
	37	829	57	69	5	37
	622	40	4	303	356	8

5. A milkman sold 267 quarts Sunday and 309 Monday. How many quarts did he sell in the two days?

6. The first day 98 children came to see our play. The second day 73 came. How many more children came to see the play the first day?

7. At the Adams School there are 245 third-grade children and 239 fourth-grade children. How many children may be on the playground at one time when these two grades have recess together?

8. Ben and Sam sell papers at a newsstand. One evening after a big fire Ben sold 106 papers and Sam sold 137. Both boys sold how many papers?

Carrying from Tens' Place

Tommy has 123 marbles, Billie has 356, and Freddie has 193. How many marbles have all?

123 356 193 672	3, 9, 12. Write 2 under ones and carry 1. 1 (carried), 3, 8, 17. Write 7 under tens and carry 1. 1 (carried), 2, 5, 6. Write 6 under hundreds. The boys have 672 marbles.

1. Gene's father bought little chicks to raise. First he bought 325; next he bought 150; and the last time he bought 280. Gene asked, "If they all live, how many big chickens should we have?"

2. Mrs. Cook is going to order tulip bulbs for two other women and herself. Mrs. Jones wants 175 bulbs; Mrs. Row will take 145 bulbs; and Mrs. Cook wants 180 bulbs. How many should she order?

Copy these examples. Add and check.

	a	b	c	d	e	f	g
3.		375	431	7	3	222	678
	567	102	389	175	35	333	54
	258	265	104	96	275	66	3
4.	147	258	231	325	200	163	47
	333	569	456	75	386	250	8
	455	176	234	205	275	135	239

Write in columns and add:

5. 405, 509, 96. **6.** 307, 409, 8.

How Well Have You Learned?

Add and check:

	a	b	c	d	e	f
1.	14	8	47	433	3	226
	868	916	106	35	56	59
	6	49	35	7	625	9
2.	250	293	73	283	555	182
	293	74	690	76	83	496
	93	570	185	780	551	290
3.	367	354	79	264	576	29
	558	89	185	6	47	4
	57	496	598	650	7	789
4.	149	250	183	235	533	67
	706	75	507	449	90	79
	28	383	39	309	64	687

5. The Evans family took a week-end auto trip. Saturday they drove 387 miles; Sunday afternoon, 160 miles; and Sunday night, 129 miles. How many miles did they drive on the trip?

6. We were going to Baltimore, a distance of 98 miles. When we had driven 37 miles, we saw a wreck. How far were we from Baltimore then?

7. There are 3 schools in Milton. In the Central School there are 435 children; in the Davis School, 207 children; and in the Endion School, 187 children. How many children are there in the 3 schools?

8. Roy's father paid $635 for a cottage, $58 for an ice house, and $73 for a boat. What did he pay for all?

Everyday Problems

1. Richard has saved 214 pennies. Write in dollars and cents the amount of money he has saved.

2. Richard and Ruth have been saving pennies. Richard has 214 pennies and Ruth has 175. Have they enough pennies together to buy their mother a birthday present that costs $3.50?

3. Add the numbers in the examples below, and then arrange the sums in b, c, d, f in the order of size.

a	b	c	d	e	f
25¢	95	25	67	5¢	100
25¢	80	50	93	100¢	20
25¢	90	75	70	50¢	80
25¢	7	100	80	75¢	100

4. Which answers above can you change to dollars and cents? Change and read them.

5. Mary bought a pound of butter which cost 35¢, a pound of cheese for 42¢, and 25¢ worth of prunes. How much did she spend?

6. There are 339 children in the building where James goes to school, and 561 in Edna's building. How many children are in both buildings?

7. Dan sold 60 tickets for the school play, Jack sold 72 tickets, and Joe sold 48. The three boys together sold how many tickets?

8. Jack sold how many more tickets than Dan?

9. A 75¢ ball and a 50¢ bat cost how much together?

How to Add Dollars and Cents

The boys in the third grade are going to buy a baseball for $1.25, and a mitt for $2.50. How much must they pay for both?

$1.25 2.50 $3.75	Add dollars and cents just as you add other numbers. Be sure to write the numbers in straight columns. Then your points (.) will be in a straight column. Notice where the dollar signs ($) are written.

Add these numbers. Be sure to check your work.

	a	b	c	d	e
1.	$1.15 2.25	$3.00 2.35	$4.50 5.75	$4.24 3.45	$1.65 1.75
2.	$ .25 .30 .75	$1.25 .50 2.00	$1.98 4.75 3.50	$ .75 1.25 5.00	$3.45 1.68 2.89
3.	$5.00 3.20 2.90	$ .94 .89 1.27	$4.75 .25 3.25	$4.00 3.00 2.00	$ .65 .08 2.98

Do You Really Know Them?

When adding or subtracting, children who count need more time and so can not keep up with those who really know the addition and subtraction facts.

When your teacher holds up a big card with a number fact on it, and gives you time only to think and write the answer before she shows the next card, will you be able to keep up? Have somebody test you with your addition and also with your subtraction silent helpers.

1. Think fifteen: Add to it 3, 1, 0, 4, 2, 5, 7, 6, 9, 8.

2. Think any number between 5 and 35: Add to it each number from 1 to 9.

Written Review

Copy, add, and check. Do not waste time.

	a	b	c	d	e	f	g
3.		23	264	187	617	78	204
	76	45	135	398	204	617	78
	98	57	78	204	78	204	519
4.			867	9	45		5
	477	700	45	20	8	378	506
	477	198	9	178	453	289	209
5.	148	200	276	7	39	185	207
	236	408	87	98	7	300	8
	457	307	508	275	276	50	96

Oral and Written Subtraction

Subtract the number in column y from every other number in the same row across. Practice subtracting orally, and then write only the differences.

y	a	b	c	d	e	f	g	h	i	j
0	4	1	7	0	9	3	6	5	8	2
1	5	2	1	7	4	10	8	3	6	9
2	7	3	9	2	5	8	11	4	10	6
3	9	12	3	4	8	10	6	11	5	7
4	13	5	11	9	7	12	4	8	6	10
5	8	11	14	6	9	13	5	7	10	12
6	6	10	8	15	11	7	14	9	12	13
7	10	7	16	9	11	8	15	12	14	13
8	15	11	8	10	17	12	14	9	13	16
9	12	18	14	17	13	15	9	16	10	11

Oral Problems

1. Walter had 11 cents. He spent 3 cents for a lollipop. How much money did he have left?

2. Jane had 8 paper dolls. She cut out 7 more paper dolls. How many had she then?

3. What is the difference between Tom's score of 9 and Dick's score of 15?

4. Jim's father started for town with 17 sacks of potatoes. He sold 9 of them at the first store. How many sacks did he have to sell then?

Keeping Up Your Skill in Subtraction

Set I (Time, without checking, 1 min.)

Write only the answers and check:

	a	b	c	d	e	f	g	h
1.	16	15	17	14	13	13	15	15
	9	7	8	8	4	8	8	9
2.	9	13	17	14	14	16	14	13
	6	5	9	9	5	7	6	9
3.	11	13	18	12	11	9	11	8
	3	7	9	3	7	5	8	3
4.	7	15	9	12	16	8	12	8
	2	9	3	5	8	5	7	2

Rest a minute and then try to beat your record.

Set II

Correct any mistake you make in a test example; then work the practice examples in that row.

	Test			Practice				
5.	55	36	67	88	99	44	23	27
	15	16	17	38	59	24	23	23
6.	85	39	78	96	67	84	59	95
	81	33	73	64	63	54	25	92
7.	89	98	67	76	54	36	49	87
	7	4	7	5	4	30	3	4
8.	75	92	87	99	35	80	85	69
	25	60	82	2	25	30	50	66

Subtracting Three-Figure Numbers

Miss Bly's third grade used 386 bottles of milk last month, and Miss Hanson's grade used 125 bottles. How many more bottles of milk did Miss Bly's grade use than Miss Hanson's?

When you subtract three-figure numbers, subtract first ones, then tens, and then hundreds.

386
125
261

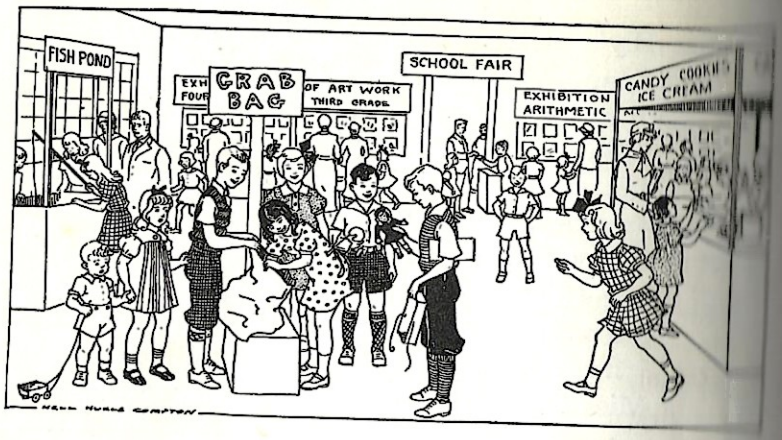
5 from 6, 1. Write 1 under ones.
2 from 8, 6. Write 6 under tens.
1 from 3, 2. Write 2 under hundreds.
Miss Bly's grade used 261 more bottles.

To check, think: 1 and 5, 6; 6 and 2, 8; 2 and 1, 3.

Copy these examples. Subtract and check.

	a	b	c	d	e	f
1.	358	479	587	908	785	666
	123	206	352	502	380	45
2.	996	198	150	169	877	779
	354	95	50	57	324	423
3.	769	897	287	753	142	759
	246	354	223	322	41	753
4.	989	968	876	569	143	719
	468	267	452	434	133	700
5.	759	988	678	996	400	989
	634	760	354	290	100	536

The School Fair



1. When the fair opened, there were 156 toys in the fish pond. Later 87 more were put in. All of them, or how many toys, were sold?

2. Seventy-eight toys were bought for the grab bag. The first night thirty-five of those toys were left. How many had been sold?

3. At the candy booth, $8.05 was taken in; $9.65 worth of ice cream was sold; and the children spent $4.26 for milk and cookies. How much was spent at the fair that evening for good things to eat and drink?

4. Before the doorkeeper went home that night he counted 428 children's tickets, and 208 tickets for grown-ups. Then he quickly found that a crowd of how many people had been at the school fair?

5. How many more tickets were sold for children than for grown-ups?

How to Subtract Dollars and Cents

Frances had $1.95 to spend on the Fourth of July. That night she had 25¢ left. How much had she spent?

$1.95
.25
$1.70

Subtract dollars and cents as other numbers. Write the numbers in straight columns. Have one point just over the other.

Work these examples in subtraction:

	a	b	c	d	e
1.	$ .55 .35	$ .75 .25	$ .98 .75	$1.25 .15	$4.50 1.50
2.	$1.95 1.63	$3.45 2.20	$2.29 1.18	$2.75 2.50	$ .75 .70

3. Joe and Al sold peanuts and popcorn. They got $9.85 for what they sold. They paid $6.50 for the peanuts and popcorn. How much more did they get back than they paid out?

What Are the Differences?

Subtract without using pencil and paper:

	a	b
1.	5 dollars 4 dimes 5 cents 3 dollars 2 dimes 4 cents	7 dimes 8 cents 5 dimes 8 cents
2.	7 dollars 7 dimes 5 cents 5 dollars 5 dimes 0 cents	7 dimes 0 cents 5 dimes 0 cents
3.	4 dollars 7 dimes 8 cents 2 dollars 7 dimes 5 cents	8 dimes 8 cents 8 dimes 5 cents

4. I have 4 dimes. If I spend 1 dime, how many will I have left?

5. I have 5 dimes and 3 pennies. If I spend a dime, how many dimes and how many pennies will I have left?

6. I had 3 dimes and 4 pennies before I changed 1 dime for pennies. How many dimes and how many pennies did I have then?

7. How many cents are 1 dime and 3 cents?

8. How many cents are 1 dime and 8 cents?

9. How many cents are 1 dime and 7 cents?

10. I have 4 pennies and 1 dime. If I change my dime for pennies, how many pennies will I have?

11. I have 3 dimes and 2 pennies. If I change 1 of my dimes for pennies, how many dimes and how many pennies will I have?

12. My 8 dimes, 3 cents = 7 dimes, ____ cents.

Making Change

1. Fred sells a paper for 3¢ to a man who gives him a dime. How much change should Fred give the man?

2. A girl buys another kind of paper from Fred for 2¢, and gives Fred a dime. What change should she get?

3. Fred had only nickels, dimes, and 2 pennies left, and so he changed a dime for pennies at a store. How many pennies did he have before he gave the girl her change? How many pennies should he have had left after he gave the girl her change?

4. How much are 10 pennies and 6 pennies?

5. How many are 1 ten and 8 ones?

6. How many are 7 pennies from 12 pennies?

7. If you have 14 pennies and spend 5, how many will you have left?

8. If you take 9 pennies from 15 pennies, how many will be left?

9. What is the difference between 13¢ and 7¢?

Something New in Subtraction

Ruth has 32¢ and Jack has 14¢ in the bank. How many more cents has Ruth in the bank than Jack?

Write		Think	
32¢	=3 dimes 2 pennies	or 2 dimes	12 pennies
14¢	=1 dime 4 pennies	1 dime	4 pennies
18¢	=	1 dime	8 pennies

You cannot subtract a larger number, 4, from a smaller number, 2. Think of 1 of the 3 dimes as changed for pennies and added to the 2 pennies, so that you can subtract. 10+2=? 4 from 12=?
You took 1 of the 3 dimes; so think: 1 from 2=?

Ruth has 18¢ more in the bank than Jack.

This is a quick way to subtract.

```
145
 28
---
117
```

Think of the 5 as 15.
8 from 15=7. Write 7 under ones.
2 from 3=1. Write 1 under tens.
Bring down 1. Does 117 check?

Tell how we got these differences. Check each.

	a	b	c	d	e	f	g
1.	63¢	44¢	143	895	672	137	93
	47¢	37¢	125	589	545	29	54
	16¢	7¢	18	306	127	108	39

Copy these examples, and subtract:

2.	17	27	37	54	452	25	565
	9	9	9	26	146	17	346

A Page of Practice

Make these subtractions, and check:

	a	b	c	d	e	f
1.	595	795	483	983	794	967
	226	338	28	744	458	428
2.	985	576	394	363	956	494
	257	359	246	339	937	275
3.	484	987	233	989	281	772
	369	819	105	536	248	543
4.	858	963	991	682	976	832
	349	907	323	237	558	805
5.	511	693	752	895	994	782
	505	666	704	236	357	428

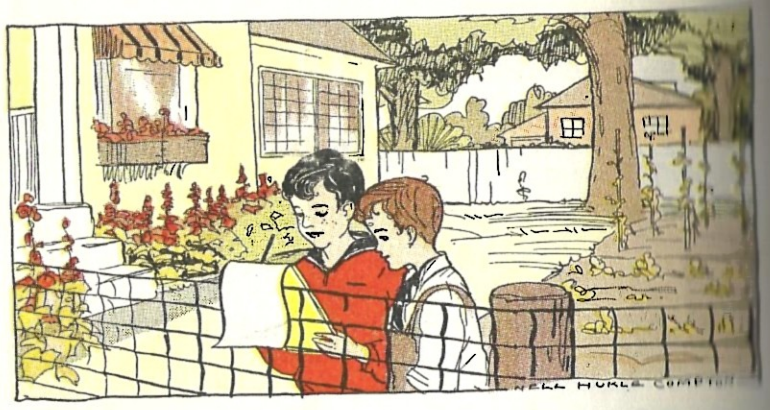
6. What is the difference between the cost of a $185 radio and a $159 radio?

7. There are two ways to go to grandmother Johnston's. By train it is 164 miles, and by bus it is 138 miles. How much shorter is the trip by bus?

8. Carl's father sold 187 bushels of eating apples and 109 bushels of cooking apples. How many bushels of the two kinds did he sell?

9. Phil had to *tally*, or count, the bales of hay as they were loaded into the box cars. The first car held 297 bales. The second car held 135 bales. How many bales did both cars hold? How many fewer bales did the smaller car hold than the larger?

Making A Garden



Henry and Spencer made a garden this year. They wrote down just how much money they paid out for the garden and how much money they took in.

1. They paid $1.85 to have the garden plowed, $1.98 for seeds, and $.89 for plants to set out. Their garden cost them how much?

2. They paid how much more for the seeds than for the plants?

3. The boys got $5 for the vegetables that their family used. They also sold $3.25 worth of peas, $.90 worth of radishes, $.48 worth of green peppers, and $1.15 worth of beans. In all they received how much for their vegetables?

4. They took in how much more than they paid out?

5. Mrs. Morris sent the boys this order: 15¢ worth of radishes, 25¢ worth of peas, and a 5-cent green pepper. How much should they have collected from her?

Subtraction: Zero in the Upper Number

May has a half dollar. If she spends 35¢ for a show, how much money will she have left?

Subtract as you did on page 120.

50¢ = 5 dimes, 0 pennies or 4 dimes, 10 pennies

15¢ = 3 dimes, 5 pennies

= dimes pennies

Why do you think: 3 dimes from 4 dimes?

Does the answer that you get check?

When the number below is larger than the number above it, think of the top number with a 1 before it, so that you can subtract. Then remember that you took 1 from the number in the column to the left.

Work these examples aloud when you are told to:

70 Tell what you think, in this way:
25 5 from 10, 5. Write 5 under ones.
45 2 from 6, 4. Write 4 under tens.
My answer is 45 and it checks.

	a	b	c	d	e	f	g	h
1.	50	80	91	50	30	23	40	60
	26	43	28	25	17	9	15	47
2.	50	30	40	50	71	60	50	$.90
	19	12	24	28	53	31	20	.25
3.	90	70	20	60	80	97	70	$.30
	32	21	9	38	26	59	44	.13

Keeping Up Your Skill

Write the differences only:

	a	b	c	d	e	f	g	h
1.	14	15	15	13	13	17	14	13
	8	6	8	8	4	8	6	9
2.	47	84	66	75	54	76	71	93
	29	35	27	26	28	29	37	48
3.	70	60	80	10	90	80	30	80
	6	54	9	7	25	61	13	58

	a	b	c	d	e	f
4.	846	929	990	488	677	629
	530	229	590	80	474	308
5.	995	993	684	759	834	660
	336	628	428	485	440	534

6. Leo weighs 79 pounds and his father weighs 186 pounds. Leo weighs how much less than his father?

7. Dan bought a sweater for $5.98 and a cap for $1.75. Both of them cost him how much?

8. What is the sum of $2.39, $6.47, and $.86?

9. What is the difference between $4.38 and $2.09?

10. Six hundred fifty miles is how much farther than three hundred twenty-eight miles?

11. Write in columns and add: 864 + 19 + 632 + 8

12. Ice cream for Dorothy's party cost $2.50, the cakes cost $2.75, and the favors, $1.35. The total spent for her party was how much?

Borrowing from Hundreds

There are 649 pupils in the Washington School. 297 of the pupils are going on a picnic. How many are not going?

649
297
352

7 from 9, 2. Write 2.
9 from 14, 5. Write 5.
2 from 5, 3. Write 3.
352 pupils are not going.

In the examples below decide how to subtract each one.

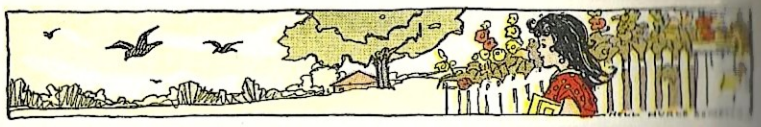
Then write the differences on your paper without copying. Check each answer before working the next example.

368
185
183

Think what to do in this way:
5 from 8, 3. Write 3.
8 from 16, 8. Write 8.
1 from 2, 1. Write 1.

	a	b	c	d	e	f
1.	459	537	236	725	388	634
	262	382	72	483	192	254
2.	343	472	527	819	457	966
	181	280	373	243	385	373
3.	575	407	761	349	513	828
	391	135	281	174	392	353
4.	650	717	369	958	273	555
	235	254	196	596	166	470

Everyday Problems



1. On the way to school today, I saw 3 blackbirds, 10 robins, 6 sparrows, and 15 crows. How many birds did I see?

2. I went to the show with my older sister, Marie. My ticket cost 15¢, and Marie's cost 35¢. How much did both tickets cost?

3. Joan jumped the rope 43 times without missing, and Alice jumped 60 times. How many more times did Alice jump than Joan?

4. Mother bought a dozen eggs for 30¢, a pound of butter for 38¢, and 25¢ worth of bacon. She needed how much money to pay for all?

5. Mrs. Jones said that Ellen could take to her teacher the roses that opened Monday, and that Sally could take those that opened Tuesday. Ellen found 19. Sally found 26. How many more than Ellen did Sally take?

6. The man who papered our walls brought 50 rolls of wall paper, and he had 11 rolls left. He used how many rolls to paper our walls?

7. At the toy store, I bought a doll for $.69, a toy broom for $.10, a ball for $.10, and $.14 worth of marbles. How much was my bill?

*8. Coming from the store with two dozen eggs, I fell and broke some. Mother found only 5 unbroken eggs. How many eggs were broken?

Shopping for Mother

1. At the fruit and vegetable store Betty bought peas for 27¢ and celery for 12¢. How much did these vegetables cost her?

2. She bought 3 pounds of peaches for 29¢ and a dozen oranges for 45¢. This fruit cost her how much?

3. How much did the fruit and vegetables cost her?

4. Betty gave the clerk $1.50 for the fruit and vegetables. How much change should she receive?

5. At the meat market Betty bought bacon for $.49 and a leg of lamb for $2.45. She paid how much for the meat?

6. At the grocery, she bought a 12¢ loaf of bread, a pound of butter for 42¢, and a can of tomatoes for 19¢. How much was her bill for these groceries?

7. Betty gave the clerk at the grocery a quarter and a half dollar. How much change should Betty receive?

Borrowing from Tens and Hundreds

May's father took her on an auto trip to James town which is 525 miles from their home. At the end of the first hour, they had driven 27 miles. How much farther did they have to go?

525	7 from 15, 8. Write 8.
27	2 from 11, 9. Write 9. Bring down 4.
498	They had 498 miles farther to go.

By noon the second day, May's father had driven 339 miles. How far from Jamestown were they then?

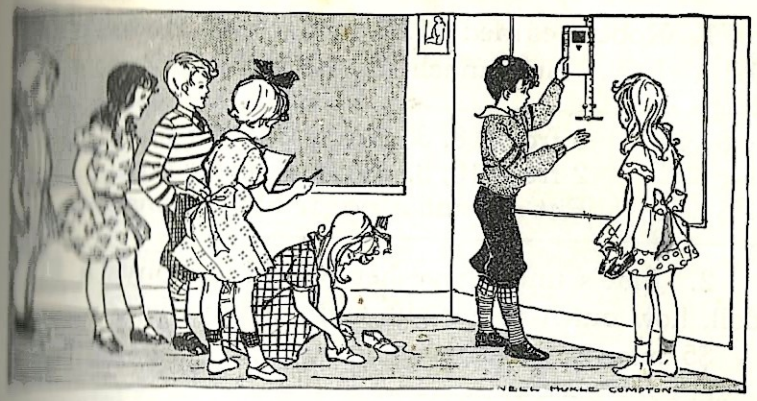
525	9 from ___, ___. Write ___.
339	3 from ___, ___. Write ___.
	3 from ___, ___. Write ___.

They were _____ miles from Jamestown then.

Make the following subtractions:

	a	b	c	d	e	f
1.	725	933	957	784	748	562
	638	846	559	467	159	379
2.	574	946	921	442	834	521
	283	909	772	347	538	246
3.	935	946	619	866	537	953
	586	797	354	498	167	897
4.	721	430	964	910	613	810
	589	96	666	321	538	264

Finding How Tall



Miss Reed's pupils were measured to find how tall each was. John was captain and Anna was his helper. This is how the pupils were measured:

1. Anna had the pupils stand in line and take off their shoes as the time came for each to be measured.
2. Because the shortest pupil was taller than a yard, or 36 inches, John put on the wall a mark that was 36 inches from the floor. He put the yardstick above the mark, as shown.
3. John read "36 and 7 inches" for Susan's height. The children at their seats said, "43 inches."

What heights should the class say for these?

	a	b	c
4.	36 and 9	36 and 6	36 and 5
5.	36 and 8	36 and 3	36 and 2
6.	36 and 10	36 and 4	36 and 7

Give these sums:

7.	35 and 6	37 and 8	39 and 4

Zero in Subtraction

1. Robert earned $1.08 last week. He spent 25¢ for a show. How much did he have left?

$1.0 8	5 from 8, 3. Write 3 under ones.
.2 5	2 from 10, 8. Write 8 under tens.
$ .8 3	Put a $ and a *point* in your answer.

2. June's uncle gave her $5. If she buys a $1.25 doll, how much of her gift will she have left?

$5 may be written as $5.00.

$5.0 0	$5.0 0 = 4 dollars, 9 dimes, 10 cents
1.2 5	1.2 5 = 1 dollar, 2 dimes, 5 cents
$3.7 5	

When you subtract, think: 5 from 10, 5. Write 5.
2 from 9, 7. Write 7.
1 from 4, 3. Write 3.

Write only what you see in the small box above.

3. The fat man at the circus weighs 505 pounds. Will's Shetland pony weighs 458 pounds. The man weighs how much more than the pony?

505	Think: 8 from 15, 7. Write 7 under ones.
458	5 from 9, 4. Write 4 under tens.
47	4 from 4, 0. Do not write 0 at the left.

Do you understand how to get these answers?

4.	**5.**	**6.**	**7.**
$8.00	$7.04	300	607
3.42	1.76	127	438
$4.58	$5.28	173	169

Problems and Practice

1. When Fred, Sam, and David got on the butcher's scales together, they weighed 205 pounds. When Fred got off, the other two boys weighed 136 pounds. How much did Fred weigh?

2. Adam packed 9 hundred apples in boxes. His sister, Margaret, packed 225 apples. How many more apples did Adam pack than Margaret?

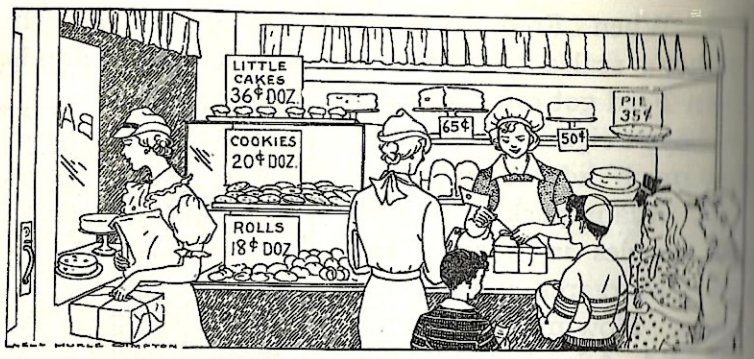
3. Ed has $5.20. How much will he have left if he pays $1.15 for a chicken?

4. Ethel was given $1.25 on her birthday. How much more does she need to buy a $3.05 doll?

Subtract and check:

	a	b	c	d	e	f
5.	$1.05	$2.00	$3.06	$4.98	$2.10	$5.00
	.50	.75	1.98	3.00	.79	4.98
6.	305	$4	$6	207	101	404
	165	2.50	5.35	4	8	9
7.	708	800	600	503	500	$5
	275	539	552	196	303	2.95
8.	831	555	213	901	673	400
	529	509	109	740	548	391

At the Bakery



While Tom waited in the bakery five people ahead of him bought things at the prices shown above.

1. One woman bought a 65¢ round cake, a dozen cookies, and a dozen rolls. The baker said, "They come to just _____."

2. Another woman bought a dozen little cakes. She gave the baker a dollar. Her change was how much?

3. A boy bought 9¢ worth of little cakes and 15¢ worth of cookies. He paid how much for all?

***4.** Peggy, a school friend, bought a 35¢ pie and 15¢ worth of cookies. She gave the baker a $1 bill and received one coin in change. What was it?

5. Jimmy, Tom's chum, brought an order for a dozen little cakes, a dozen rolls, a 50¢ round cake, and a 35¢ pie. Jimmy paid how much?

***6.** Tom had just ninety-eight cents. He bought a 65¢ cake and a dozen rolls. Did he have enough money left to buy a dozen cookies?

Keeping Up Your Skill

Add and check:

	a	b	c	d	e	f
1.	341	8	9		4	608
	6	9	6	36	49	97
	50	9	4	49	586	359
2.		28	44			
	75	74	78	$6.90	$.15	$2.69
	96	13	5	.85	.85	3.55
	89	97	77	8.20	.83	.86

Subtract and check:

3.	899	766	129	135	155	149
	356	564	24	82	65	80
4.	75	57	35	60	968	836
	47	8	28	38	396	95
5.	$9.74	$7.44	$6.14	$9.05	$5.00	600
	3.76	2.53	1.39	.75	1.75	151

6. Amy said, "During vacation I spent 7 days at the lake, 9 days on my uncle's farm, and I was at home the rest of the time. I was away from home how many days?" What is your answer?

7. If you know how much money you had before you went to the store and how much you had left, how can you find how much you spent?

8. If you know the cost of each of three toys, how can you find the total cost?

Testing Your Progress

Add and check: (Time without copying, 5 min.)

a.	142	40	806	**b.**	6	8	5
	7	3	90		7	4	8
	50	635	2		5	7	7
c.	26	71	63	**d.**	69		26
	38	19	17		57		83
					78		99
e.	408	8	567	**f.**	$2.50	$.25	
	79	65	67		.75	.75	
	526	724	7		5.00	.85	

Subtract and check: (Time without copying, 5 min.)

g.	986	785	697	**h.**	178	169	
	536	382	92		83	79	
i.	33	84	50	**j.**	859	438	
	26	45	17		283	92	
k.	$8.57	$7.21	$9.17	**l.**	$6.05	$4.00	
	5.59	4.72	7.59		.75	.53	

Standards

	Excellent	Good	Fair	Poor
Addition	18 or 19 right	17 right	15 or 16 right	Fewer than 15 right
Sub-traction	17 or 18 right	16 right	14 or 15 right	Fewer than 14 right

Problem Test

(Time without copying, 9 min.)

1. Mr. and Mrs. Gates bought their son, William, an electric train which cost $5.98. They bought a $6.15 tent for their son, Sidney. How much did Mr. and Mrs. Gates pay for both gifts?

2. What is the difference in price between a 69¢ pair of stockings and a 95¢ pair of stockings?

3. Tom weighs 75 pounds and Ed weighs 57 pounds. How much less does Ed weigh than Tom?

4. On the first day of their trip Dick's father drove 287 miles; the second day, 369 miles; and the third day, 176 miles. How far did he drive in the three days?

5. How much farther did Dick's father drive the first day than the third?

6. A yard and 8 inches are how many inches?

7. Eighteen inches is how many inches less than a yard?

8. A half dollar and a dime equal how many cents?

9. Bert lives 15 blocks west of the post office and Al lives 8 blocks east of the post office on the same street. How many blocks apart do the boys live?

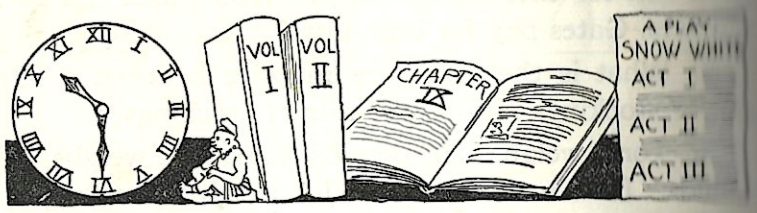
10. Glen's father raised 13 bushels of potatoes. He said, "We will need 20 bushels for our winter's supply. We must buy _____ bushels more."

Standards

Excellent	Good	Fair	Poor
10 right	9 right	7 or 8 right	Fewer than 7 right

CHAPTER III

Using Roman Numbers



The figures 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 brought from India by Arab merchants, are called Arabic figures.

The Romans used letters for numbers, I for 1, V for 5, X for 10, C for 100, D for 500, and M for 1000.

The pictures show some of our uses for Roman numbers. Have you seen other Roman numbers?

Find on the clock face each Roman number below:

1	2	3	4	5	6
I	II	III	IIII or IV	V	VI
7	8	9	10	11	12
VII	VIII	IX	X	XI	XII

1. What letters did a Roman boy use to write 6? Use Roman numbers to write 6.

2. How did a Roman boy write 7? 8? 10? 11? 12?

3. Use Roman numbers to write: 4 (1 from 5); 9 (1 from 10).

4. Read these Roman numbers: III, V, I, X, II, VI, XI, IX, VIII, IV, IIII, VII, XII.

Measures

Choose from this list of words the right word for each blank below:

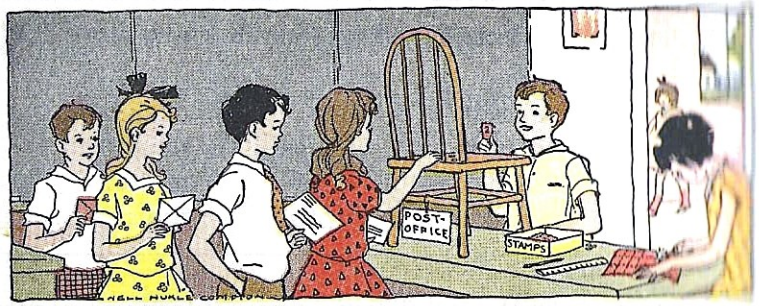
years	dozen	pint	dollars
pound	quart	inches	hours
yard	feet	cents	gallon
minutes	months	cupful	days

1. You measure your age in _____ and _____.
2. You measure your money in _____ and _____.
3. You buy cookies by the _____, or _____.
4. You buy meat by the _____.
5. You buy milk by the _____ and _____.
6. Gasoline is bought by the _____.
7. When mother makes cake, she measures sugar by the _____.
8. Mother buys cloth or ribbon by the _____.
9. You measure your jump by _____ and _____.
10. Time is measured by _____, or _____, or, etc.

Tell what number to use in each blank space below:

	a	b
11.	___ months = 1 year	___ cents = 1 dollar
12.	___ pints = 1 quart	___ nickels = 1 dollar
13.	___ dimes = 1 half dollar	___ things = 1 dozen
14.	___ days = 1 week	___ inches = 1 yard
15.	___ inches = 1 foot	___ feet = 1 yard
16.	___ nickels = 1 dime	___ dimes = 1 dollar
17.	___ halves = 1 whole	___ quarters = 1 whole

Buying Stamps



The third-grade children at Betty's school have written letters to invite their friends to a school play. A 2-cent stamp must be put on each letter.

Play that you are selling stamps to the other children. Can you answer quickly the questions below?

1. How much will 2 stamps cost?
2. How much money must I give for 4 stamps?
3. How much must Kenneth pay for 3 stamps?
4. Helen needs 5 stamps. How much should you charge her?

One	2-cent stamp costs	2¢
Two	2-cent stamps cost	4¢
Three	2-cent stamps cost	6¢
Four	2-cent stamps cost	8¢
Five	2-cent stamps cost	10¢

The Meaning of Times and Multiply

Times

Jane took 2 dates from the dish that Aunt Ella passed. When the dish was passed again, Jane took 2 more dates. How many *times* did she take 2 dates? How many dates did Jane take?

2 times 2 = 4

Instead of writing "2 times 2 = 4," you may use a shorter way and write: $2 \times 2 = 4$.

Multiply

Mrs. Gray gave 2 cookies to Carl, 2 cookies to May, and 2 cookies to Joe. How many cookies did she give to the 3 children?

You can find the answer in two ways:

One way is by adding: $2 + 2 + 2 = 6$.

The other way is a short cut for adding when all of the numbers to be added are the same. You can get the answer the short way because you remember that three 2's are 6, or $3 \times 2 = 6$. When you think, three 2's are 6, or 3 times 2 is 6, you *multiply* 2 by 3 and get 6.

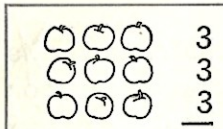
How can you tell whether a sign means *add*, or *multiply*?

Read these examples. Work them.

	a	b	c	d
1.	$8 + 9 =$	$2 \times 2 =$	$5 + 9 =$	$4 \times 2 =$
2.	$5 \times 2 =$	$2 + 4 =$	$5 + 2 =$	$3 \times 2 =$

$\times$ means *times* or *multiply*. It is called the *times sign*.

Some Important Multiplication Facts



3
3
3

Three 3's = 9

The multiplication fact is: $3 \times 3 = ?$

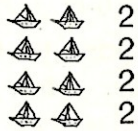
$\times\ 3$

9

If you learn the multiplication facts, you can often save time by multiplying instead of adding.

5
5

Two 5's = 10



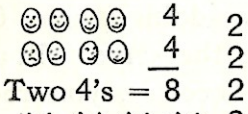
2
2
2
2
2

Five 2's = 10

The multiplication facts are:

$5 \times 2 = 10$ and $2 \times 5 = 10$

$2 \times 5 = ?$ $5 \times 2 = ?$



4
4

Two 4's = 8

2
2
2

Four 2's = 8

The multiplication facts are:

$4 \times 2 = 8$ Product and $2 \times 4 = 8$ Product

$2 \times 4 = ?$ $4 \times 2 = ?$

When you multiply, the answer is called the *product*.

1. Point to each of the products shown above.

2. Uncle Bob asked Amy to buy 5 stamps that cost 2¢ each. How much money did she need?

3. When Amy brought the stamps home, her uncle said, "Now, how much money will you need to buy 2 candy bars that cost 5¢ each?" What would you answer?

Working Problems

As you read a problem before you work it, think:

a. What does the problem tell you?
b. What does the problem ask you?
c. What must you do with the numbers to get the right answer?

1. Billie wants to buy a baseball for 75¢, a glove for 75¢, and a bat marked 25¢. How much money does Billie need for all?

What things does Billie want to buy? How much must he pay for the baseball? for the glove? for the bat? What must you do with the numbers to get the answer?

2. Fred has 15 white chickens, 8 black chickens, and 17 gray chickens. How many chickens has he?

3. Albert has 23 chickens. How many chickens fewer than Fred has Albert? (To get the answer to problem 3, you must use the answer to problem 2.)

4. One colored crayon cost 2¢. How much must I pay for 4 of those colored crayons?

5. How much will 5 apples cost at 2¢ each?

6. A gallon is 4 quarts. Two gallons are how many quarts?

7. Mother says that my brother Roger was 6 years old when I was born. I am 8 years old now. How old is Roger?

8. Neil threw the ball into the basket 5 times, and made 2 scores each time. How many scores did he make in all?

Changing the Places of Numbers to Be Multiplied Does Not Change the Product

How many are
3 × 2 ponies?

How many are
2 × 3 ponies?

$$3 \times 2 = 2 \times 3$$

1. $2 \times 4 = 8$; and so, $4 \times 2 =$ _____.

2. $5 \times 2 = 10$; and so, $2 \times 5 =$ _____.

What numbers have been left out below?

a **b** **c**

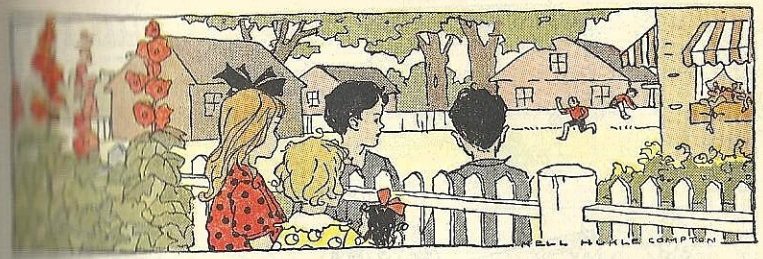
3. $2 \times 5 = 5 \times$ ___. $3 \times 2 =$ ___ $\times 3$. $4 \times 2 =$ ___ $\times 4$.

4. George worked 4 weeks and earned $2 a week. His older brother, Gordon, worked 2 weeks and earned $4 a week. How much did each earn?

5. In a game of Bean Bag, Mary hit a ring twice and made 3 points each time. Sara hit a ring 3 times and made 2 points each time. What was each girl's score?

When you change the places of the numbers to be multiplied, the product is the same.

Problems



1. There are 2 girls in the Jones family, 2 boys in the Smith family, and 2 boys in the Wilson family. How many children are in the 3 families?

First work the problem above by adding. Can you write the multiplication fact that gives the same answer? Which way is shorter?

2. James had 2¢ in his bank. His father gave him 4¢ more, and he earned 5¢ by running an errand. How many cents did James have then?

Could you work problem 2 by multiplying? Why?

3. Otto Smith gets 2 cents for every paper that he sells. Another paper boy buys 5 papers from Otto. How much money should Otto get from him?

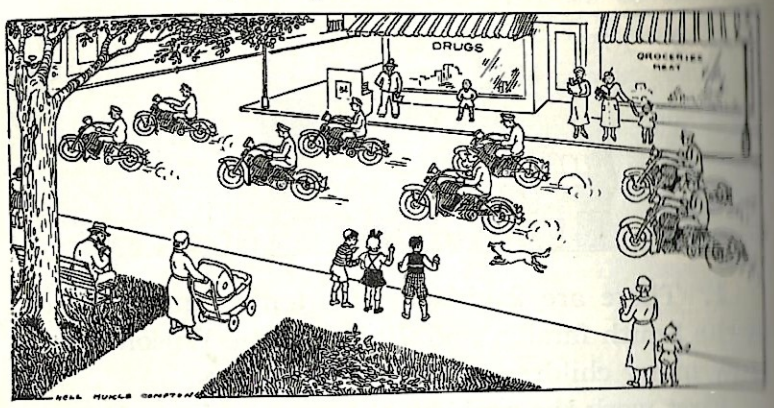
4. Ruth asked the man in the post office for 3 2-cent stamps. How much must Ruth pay for the stamps?

5. Ruth has given the man in the post office a dime. How many pennies should he give her?

6. Copy these numbers, and add:

0	1	2	3	4	5
0	1	2	3	4	5

Multiplication Facts



The children tried to count the policemen who were riding by in 2's.

John tried to count each policeman as he rode by, but he could not count fast enough that way to keep up.

Cora counted them by 2's: "2, 4, 6, 8, and so on."

Count by 2's to 10.

William had another way. Each time 2 policemen rode past, he counted like this: 1, 2, 3, 4, 5 times 2 policemen rode past. William knew: $5 \times 2 = 10$.

Study together the multiplication facts in each box below, and make a silent-helper for each fact.

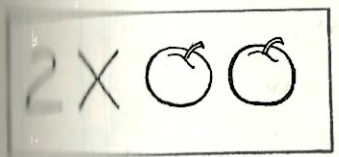
Read the first fact: 2 times 2 is 4; the next 2 times 3 is 6, and so on.

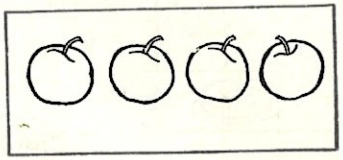
Study Chart 1. Multiplication

2	3	2	5	2	4	2	3
2	2	3	2	5	2	4	3
4	6	6	10	10	8	8	9

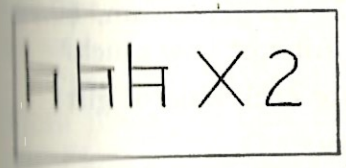
A Picture Game

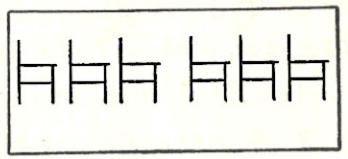
On strips of cardboard about 5 inches wide and 3 inches long, paste pictures to show each multiplication fact on Study Chart 1. Show the example on one card and the product on another card, like this:





Because the pictures come after the × on the first card, read, "2 *times* 2 apples."

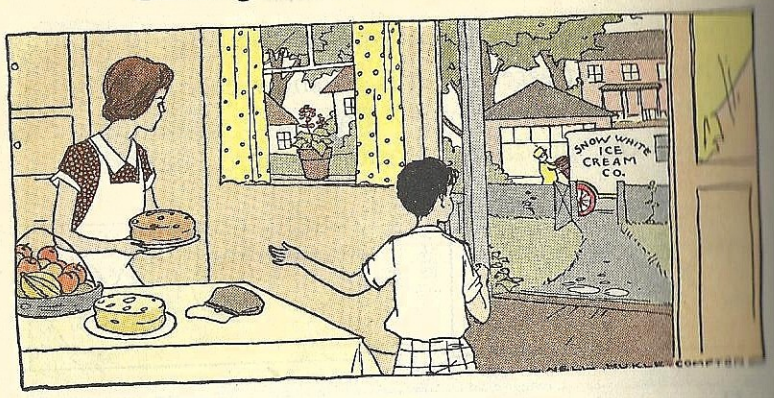




When the pictures on the card come before the ×, as shown above, read, "3 chairs *multiplied by* 2."

How to play: A pupil gathers the cards and mixes them. Then each pupil is given any two cards that do not go together. Next, some pupil shows a card to the class. Whoever has the card that goes with the one shown says, for example, "I have it. 2 times 4 apples is 8 apples." If that answer is right, the class says, "True." If the answer is wrong, the class says, "False." The one who shows a true answer may show his other card.

Getting Ready for Ted's Party



1. Sixteen boys and seventeen girls, or how many children, were invited to Ted's party?

2. Ted's mother paid $3.75 for ice cream, $2.75 for cakes, and $2.25 for fruit. All cost how much?

Tell how much Ted spent for each kind of gift:

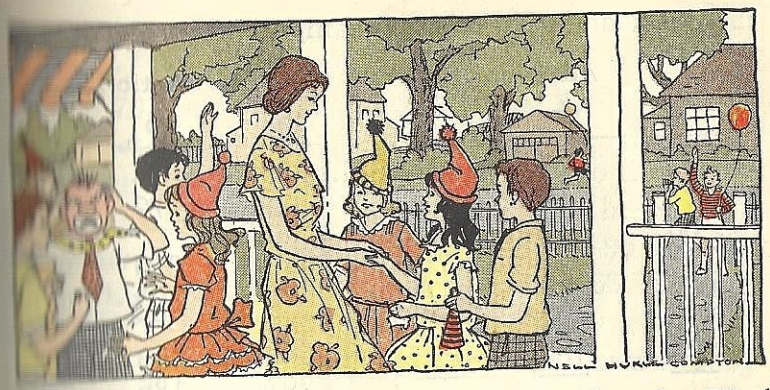
3. For the girls at his party:

2 gold paper hats at 5¢ each, cost ____¢.
3 silver paper hats at 3¢ each, cost ____¢.
4 red paper hats at 2¢ each, cost ____¢.
5 green paper hats at 2¢ each, cost ____¢.
3 pink paper hats at 2¢ each, cost ____¢.

4. For the boys at his party:

2 curled paper snakes at 3¢ each, cost ____¢.
2 yellow balloons at 4¢ each, cost ____¢.
5 tin whistles at 2¢ each, cost ____¢.
2 funny faces at 2¢ each, cost ____¢.
4 paper horns at 2¢ each, cost ____¢.
2 wooden clackers at 5¢ each, cost ____¢.

Fun at the Party



1. At the party, Ted brought out a glass jar filled with jelly beans. "Whoever guesses closest to the number of jelly beans in this jar may have the candy," he said.

There were 439 jelly beans in the jar. Jim and Flora made the best two guesses. Jim guessed 368, and Flora guessed 599. Who won the candy?

2. Below are the scores in the bean bag game. Who won the first prize? Who won the second prize? The lowest score was ____.

Tom	Jack	Ella	Ruth	Bob	Joan	Don	Sara
9	7	9	5	8	9	7	5
5	9	7	8	9	7	8	0
9	8	5	6	9	6	8	9

When the children sat down to eat, Ted passed his gifts.

*3. Had he bought a gift for each girl?

*4. Had he bought enough gifts to give one to each boy, besides himself?

Practice Page

Work and check each example and problem.

Addition

	a	b	c
1.	33	59	43
	87	66	95
	86	98	80
2.	605	15	324
	170	600	60
	224	106	525
3.	159	674	87
	443	97	892
	86	79	80

Subtraction

	a	b	c
4.	389	675	943
	321	472	201
5.	178	210	970
	93	80	651
6.	649	368	935
	297	185	846
7.	748	$9.08	$7.00
	159	5.75	4.25

Multiplication

	a	b	c	d	e	f	g	h
8.	3	2	4	2	2	3	5	2
	3	5	2	3	4	2	2	2

9. Susan bought a loaf of bread for 13¢. She gave the baker a half dollar. How much change did the baker give?

10. An ice-cream cone costs 5¢. How much will Dick have to pay if he buys a cone for himself and one for his sister?

11. Don hid eighteen Easter eggs. The children hunting for them found five. How many were left to find?

Interesting Problems

1. Vivian is looking at two sets of dishes for her playhouse. The price of one set is $.85 and of the other $1.70. How much can she save by buying the cheaper set?

2. Lee's father sends milk in big cans to the cheese factory. He weighs each can of milk before he sends it. Yesterday his three cans weighed 98 lb., 96 lb., and 75 lb. Lee said that they all weighed 269 lb. Was he right?

3. Frank bought three lollipops at 3¢ each. They all cost how much?

4. To play a game of basketball, 2 teams with 5 boys on each team are needed. How many boys are needed for both teams?

5. What is the difference in price between a $.98 alarm clock and a $2.50 clock?

6. Paul weighs 74 pounds and Jean weighs 67 pounds. The difference between their weights is how many pounds?

7. Billy can get 2 marbles for a cent. How many can he get for 4 cents?

8. Two nickels equal how many cents?

9. Two 4-cent stamps cost how much?

10. What multiplication fact has the answer given by this example: 2+2+2+2+2?

Give the products quickly:

	a	b	c	d
11.	4 × 2 =	3 × 3 =	5 × 2 =	3 × 2 =
12.	2 × 5 =	2 × 3 =	2 × 4 =	2 × 2 =

Problems for You to Work

1. How many mittens must grandmother knit in making 5 pairs?

2. Bill saw some candy apples marked 4¢ each. He wants to take 2 of them home. How much money does Bill need?

3. Bert lives 2 blocks from the school. He walks that distance going to and from school 4 times each day. Altogether he walks how many blocks going to and from school each day?

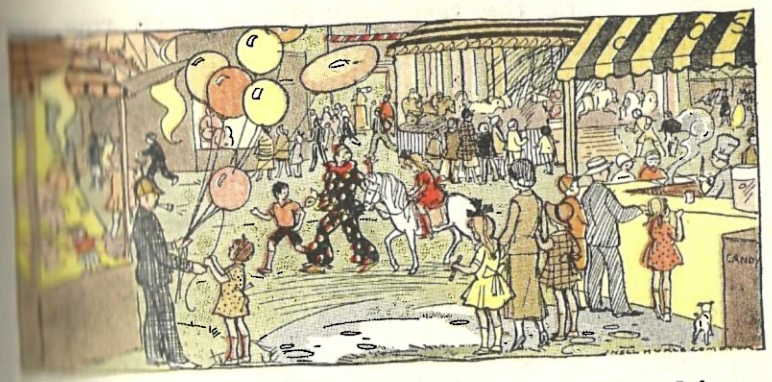
4. Florence can run around the schoolhouse once in 3 minutes. She says that she can run around 3 times at the same speed in _____ minutes.

5. You should know all of the multiplication facts below. Give the products quickly. Use your silent helpers again if some facts need more study.

2	2	3	2	5	2	4	3
2	5	2	4	2	3	2	3

***6.** Fred bought 2 popcorn balls that cost 3 cents each. How much change did he get from a dime?

A Day at the Fair



Jean and Spencer wanted to go to the fair, so Uncle Fred gave each of them $1.50.

1. Each of them bought a round-trip bus ticket to the fair grounds for $.25. Then each had how much money left?

2. They had to pay 25¢ each to get into the fair grounds. That left how much for each to spend?

3. Jean bought 20¢ worth of tickets for the merry-go-round; she had a pony ride for 10¢; she paid 35¢ for her lunch, and 25¢ for a toy. How much did she spend on the fair grounds? She had how much left?

*4. Spencer had a ride on an airplane swing for 10¢; he bought 20¢ worth of merry-go-round tickets; and he paid 40¢ for his lunch. Did he have enough money left to buy a 35¢ toy for his little brother, Ned?

*5. At 4 o'clock a man told Spencer that their bus would leave from the fair gate in 35 minutes. At what time would the bus leave?

How Well Do You Remember?

First work the test examples in each row, and check your answers. If you make a mistake in a test example, you need more practice on that kind; so work the practice examples in that row.

Addition

	Test			Practice				
	a	b	c	d	e	f	g	h
1.	3 4 2	5 4 6	0 7 5	5 0 8	3 6 7	4 5 6	5 6 0	2 6 8
2.	54 27	29 56	86 57	38 55	57 38	65 99	48 87	88 79
3.	34 53 42	21 26 48	33 45 75	54 20 75	23 38 10	64 16 90	30 56 97	23 65 56

Subtraction

	a	b	c	d	e	f	g
4.	158 63	139 86	178 82	159 85	167 97	146 80	137 93
5.	692 514	951 335	894 527	782 546	961 426	993 266	455 329
6.	730 90	909 354	500 225	703 43	915 692	910 387	800 253

Problem Test

1. I had 3 dimes and 2 pennies. I changed 1 of my dimes for pennies. How many dimes and how many pennies did I have then?

2. Last night Mabel started at the top of page 134 to read her book. She stopped at the top of page 192. How many pages did she read?

3. Warren weighs 54 pounds and Lois weighs 43 pounds. How many pounds must their pony carry when both are on his back?

4. Julia bought three 2¢ sticks of candy. She paid how many cents for all of them?

5. A $6.50 sweater costs how much less than another sweater at $7.75?

6. Sadie bought four 2-cent flags. She gave the clerk ten cents. How much change did she get?

7. Jed weighs 98 lb., Carl weighs 76 lb., and Tim weighs 68 lb. What would be the load on Harry's wagon if all stepped on at once?

8. Betsy bought three presents. A dish for her mother cost $.98, a handkerchief for her father cost $.65, and a doll for her sister cost $.58. She paid how much for all three presents?

9. Roy walks 2 blocks to school every morning. Jack says that he walks 5 times as far as Roy. How many blocks does Jack walk to school?

10. A five-dollar doll costs how much more than a three-dollar and sixty-nine cent doll?

What Divide Means

Dick has 8 pennies. Uncle Henry asked him how many 2-cent apples he could get for 8 cents.

Dick put the pennies down two at a time, as shown. Then he counted the 2's. In this way, Dick found how many 2's are in 8, or 2 in 8, 4 times. A short way to write this example is: $2\overline{)8}^{\,4}$.

When you see $2\overline{)8}$, think: 2 in 8, 4 times (because $4 \times 2 = 8$). Write the 4 just above the number 8 that you divide: $2\overline{)8}^{\,4}$

Cover two of Dick's pennies in the picture. How many 2's in 6? Write that example in the short way.

There is another short way to write, 8 divided by 2 = 4. It is: $8 \div 2 = 4$.

Copy these examples, and read each:

$2\overline{)4}^{\,2}$ $\quad 4 \div 2 = 2 \quad$ $3\overline{)6}^{\,2}$ $\quad 6 \div 3 = 2$

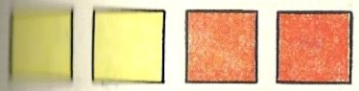
÷ is the division sign. It means *divided by*.

Division and Review

Dividing

Cut out about 20 little squares of paper, all the same size.

Take 4 of the squares. Color 2 squares with one color; then color the other 2 squares with another color like this:



How many colors were used?

How many 2's in 4?

Take 6 more squares. Color 2 red, 2 blue, and 2 yellow. How many colors did you use? How many 2's in 6?

Color 8 more squares in the same way, using a different color for every 2 squares. How many colors did you use? How many 2's in 8?

*What Signs Were Left Out?

First, read carefully the examples below and think what sign was left out where the dots are.

Second, copy each example on your paper and put the right sign in place of the dots. The first example should be like this: **1.** $7 - 4 = 3$.

	a	b	c
1.	7 . . . 4 = 3	3 . . . 2 = 6	4 . . . 3 = 7
2.	2 . . . 3 = 6	3 . . . 3 = 6	4 . . . 3 = 1
3.	8 . . . 7 = 15	5 . . . 5 = 10	4 . . . 2 = 8
4.	3 . . . 2 = 6	2 . . . 5 = 10	6 . . . 4 = 10
5.	5 . . . 5 = 0	5 . . . 2 = 10	6 . . . 3 = 3

Multiplication Helps You with Division

Knowing the multiplication facts helps with the division facts. You remember $\times \frac{2}{4} = \frac{4}{8}$, and $\times \frac{4}{2} = \frac{8}{8}$.

You know that the answer of $2\overline{)8}$ must be 4, because $4 \times 2 = 8$. What must the answer be to $4\overline{)8}$?

Can you give the missing numbers?

	a	b	c	d
1.	$4 \times 2 =$	$? \times 2 = 8$	$2\overline{)8}$	$8 \div 2 =$
2.	$2 \times 3 =$	$? \times 3 = 6$	$3\overline{)6}$	$6 \div 3 =$
3.	$2 \times 5 =$	$? \times 5 = 10$	$5\overline{)10}$	$10 \div 5 =$
4.	$3 \times 2 =$	$? \times 2 = 6$	$2\overline{)6}$	$6 \div 2 =$
5.	$3 \times 3 =$	$? \times 3 = 9$	$3\overline{)9}$	$9 \div 3 =$

Copy the work below and write the answers:

	a	b	c	d	e	f
6.	$2\overline{)8}$	$3\overline{)6}$	$2\overline{)4}$	$2\overline{)6}$	$2\overline{)10}$	$3\overline{)9}$
7.	$5\overline{)10}$	$2\overline{)10}$	$3\overline{)9}$	$2\overline{)4}$	$4\overline{)8}$	$2\overline{)6}$
8.	$2\overline{)6}$	$2\overline{)8}$	$3\overline{)6}$	$2\overline{)10}$	$3\overline{)9}$	$4\overline{)8}$

9. How many 2¢ stamps can Ann buy for 4¢?

10. How many 2¢ flags can Jerry buy for 6¢?

Be sure to make a silent-helper for each fact:

Study Chart 1. Division

$\frac{2}{2\overline{)4}}$	$\frac{3}{2\overline{)6}}$	$\frac{2}{3\overline{)6}}$	$\frac{4}{2\overline{)8}}$	$\frac{2}{4\overline{)8}}$	$\frac{5}{2\overline{)10}}$	$\frac{2}{5\overline{)10}}$	$\frac{3}{3\overline{)9}}$

When you divide, the answer is called the *quotient*.

Name the quotients on the chart above.

Multiplying Ones

Sally wants to take home 4 lollipops at 1¢ each. How many cents does she need?

$4 \times 1 = 4$, so $1 \times 4 = 4$

If you need help on new products below, look at the study chart on this page. Give the products.

	a	b	c	d	e	f	g	h
1.	1	1	4	1	6	1	8	1
	4	1	1	5	1	7	1	6
2.	2	7	5	1	9	3	3	1
	2	1	2	2	1	1	3	3
3.	2	3	1	2	5	2	1	4
	4	2	8	3	1	5	9	2

Learning the multiplication facts below will save you much time later. Make a silent-helper for each fact.

Study Chart 2. Multiplication

1	3		1	6		1	7		1	8						
3	1		6	1		7	1		8	1						
3	3		6	6		7	7		8	8						
1	4		1	9		1		1	5		1	2				
4	1		9	1		1		5	1		2	1				
4	4		9	9		1		5	5		2	2				

1 × any number = the number itself.
Any number × 1 = the number itself.

At the Fruit Store

1. Ted bought 2 oranges for how much?

2. How much did 2 plums cost?

3. Jack has 8 cents to spend for pears. How many can he buy?

4. How many apples could Jack buy with 8 cents?

5. Marion needs how much for 3 peaches?

6. How much would Ed have to pay for 5 apples?

7. Bill has a dime. How many oranges can he get for it?

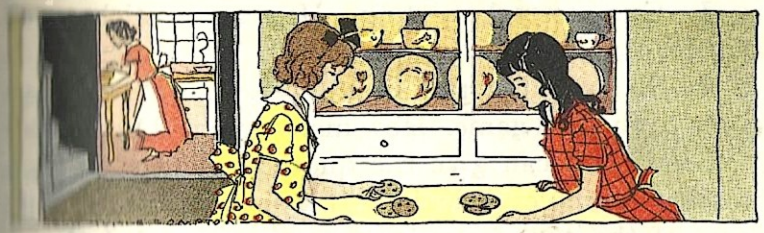
8. Jessie bought a pear, a peach, and an orange. She paid how much for them? Jessie has 9¢ left. How many more peaches can she buy?

***9.** Grace paid how much for 2 peaches and how much for 3 apples? How much did she pay for all?

***10.** Norman bought 2 pears and 1 apple. He paid how much for his fruit? How many apples would that much money buy?

***11.** Two pears cost how much more than a peach?

One-Half of a Number of Things



1. Mary's mother gave her 6 cookies and told her to give Margaret $\frac{1}{2}$ of them. Mary divided the cookies into 2 equal piles. How many cookies were there in each pile? $\frac{1}{2}$ of 6 cookies = ____ cookies.

2. Mrs. Smith said, "Bob, please get 4 apples out of the basket and put half of them in Billy's lunch box and half of them in yours."

Draw a picture to show the number of apples that Bob should put in each box.

$\frac{1}{2}$ of 4 apples = ____ apples.

3. Gordon gave his sister Laura a dime and told her to give half of the money to her cousin Eleanor who was visiting them.

Laura thought, "I can change my dime for 2 nickels. Each nickel is equal to $\frac{1}{2}$ of a dime."

5¢ + 5¢ = 10¢. $\frac{1}{2}$ of 10¢ = ____¢. $2\overline{)10}$.

4. $4 \div 2 = ?$ $2\overline{)4}$ $\frac{1}{2}$ of 4 = ?

5. $\frac{1}{2}$ of 4 = $2\overline{)\ .\ .}$ $\frac{1}{2}$ of 10 = $2\overline{)\ .\ .}$ $\frac{1}{2}$ of 6 =

6. $\frac{1}{2}$ of 8 = $\ .\ .\overline{)8}$ $\frac{1}{2}$ of 2 = $2\overline{)\ .\ .}$ $\frac{1}{2}$ of 1 =

To find $\frac{1}{2}$ of a number, divide the number by 2.

More Division Facts

1. Gum costs 1¢ a stick. How many sticks can I buy for 7¢?

2. Six boys can ride in one car. Only 6 boys are going to the ball game. How many cars will be needed?

See if you can give the quotient of each of these division examples quickly. If you have trouble with some of the new facts, look on the chart below.

	a	b	c	d	e	f
3.	$1\overline{)6}$	$1\overline{)3}$	$2\overline{)2}$	$1\overline{)4}$	$2\overline{)8}$	$3\overline{)9}$
4.	$5\overline{)10}$	$9\overline{)9}$	$4\overline{)8}$	$1\overline{)7}$	$1\overline{)1}$	$2\overline{)4}$
5.	$3\overline{)6}$	$1\overline{)2}$	$3\overline{)3}$	$5\overline{)5}$	$4\overline{)4}$	$2\overline{)10}$
6.	$6\overline{)6}$	$1\overline{)5}$	$8\overline{)8}$	$1\overline{)9}$	$7\overline{)7}$	$1\overline{)8}$

Be sure to make a silent-helper for each fact.
Study together the division facts in each box.

Study Chart 2. Division

$1\overline{)3}$ $\quad 3$	$1\overline{)7}$ $\quad 7$	$1\overline{)5}$ $\quad 5$	$1\overline{)2}$ $\quad 2$	$1\overline{)6}$ $\quad 6$	$1\overline{)4}$ $\quad 4$
$3\overline{)3}$ $\quad 1$	$7\overline{)7}$ $\quad 1$	$5\overline{)5}$ $\quad 1$	$2\overline{)2}$ $\quad 1$	$6\overline{)6}$ $\quad 1$	$4\overline{)4}$ $\quad 1$
$1\overline{)8}$ $\quad 8$	$8\overline{)8}$ $\quad 1$	$1\overline{)1}$ $\quad 1$	$1\overline{)9}$ $\quad 9$	$9\overline{)9}$ $\quad 1$	

Any number divided by 1 = the number itself.
Any number divided by itself = 1.

How to Multiply Some Larger Numbers

On Saturday Sue is going to take home her little cousin who lives in the next town. The bus fare is 12 cents each way. Sue must pay 2 fares one way and 1 fare the other way, or 3 fares. How much money must she take for bus fares?

The long way to find the answer is by adding. The short way is by multiplying, like this:

Long Way Add:	Short Way Multiply:	
12¢		First, multiply the 2.
12¢	12¢	$3 \times 2 = 6$.
12¢	$\times 3$	Write 6 under the 3.
36¢	36¢	Next, multiply the 1.
		$3 \times 1 = 3$.
		Write 3 under the 1.

Sue will need to take 36 cents.

Study these examples. Are the products right?

21	13	33	43	24
$\times 2$	$\times 2$	$\times 2$	$\times 2$	$\times 2$
42	26	66	86	48

Multiply these numbers and write the products on your paper:

	a	b	c	d	e	f	g	h
1.	32	42	22	34	31	33	44	11
	$\times 3$	$\times 2$	$\times 4$	$\times 2$	$\times 3$	$\times 2$	$\times 2$	$\times 5$
2.	24	43	23	34	21	14	23	43
	$\times 2$	$\times 2$	$\times 3$	$\times 2$	$\times 4$	$\times 2$	$\times 3$	$\times 2$

Keeping in Practice

Multiply

	a	b	c	d	e	f	g	h
1.	21	22	23	34	42	11	12	43
	3	4	3	2	2	5	4	2
2.	11	11	78	12	11	32	11	94
	6	7	1	3	9	3	4	2
3.	32	29	23	11	13	61	31	63
	2	1	2	8	3	1	2	1

Divide

	a	b	c	d	e	f
4.	$5\overline{)10}$	$3\overline{)6}$	$1\overline{)7}$	$3\overline{)9}$	$4\overline{)8}$	$2\overline{)10}$
5.	$1\overline{)2}$	$3\overline{)3}$	$8\overline{)8}$	$2\overline{)6}$	$1\overline{)5}$	$2\overline{)9}$
6.	$2\overline{)4}$	$2\overline{)8}$	$9\overline{)9}$	$5\overline{)5}$	$7\overline{)7}$	$1\overline{)1}$

Find

7. $\frac{1}{2}$ of 4 $\frac{1}{2}$ of 10 $\frac{1}{2}$ of 8 $\frac{1}{2}$ of 6 $\frac{1}{2}$ of 9

8. Tom bought 3 sacks of glass marbles. Each sack held 12 marbles. How many marbles did he buy?

9. How many 5-cent pencils can Gertrude buy with a dime?

10. Gum is 5¢ a package. How much will 9 packages cost?

11. Rex has 3 houses for doves. Each will hold 12 doves. How many doves will all hold?

12. George sells eggs for 23¢ a dozen. How much should he get from Mr. Cook for 3 dozen?

Zero in Multiplication

Frank was eating candy when he came to the playground. Philip asked him for some. "I haven't any more, and you can search me," Frank said. Philip felt in Frank's coat pockets, and in his trousers pockets. He felt in 4 pockets, but there was no candy there.

$0 + 0 + 0 + 0 = 0$ $\quad 4 \times 0 = 0.$

Then Philip thought of an inside pocket in Frank's coat; but there was no candy there.

$0 + 0 + 0 + 0 + 0 = ?$ $\quad 5 \times 0 = ?$

You remember that 1×4 gives the same product as 4×1; that $3 \times 2 = 6$; that $2 \times 3 = 6$, and so on. It is also true that $4 \times 0 = 0$, and $0 \times 4 = 0$.

Copy these examples and write the products:

1.	$6 \times 0 =$	$9 \times 0 =$	$0 \times 8 =$	$9 \times 1 =$
2.	$8 \times 0 =$	$5 \times 0 =$	$2 \times 5 =$	$0 \times 6 =$
3.	$7 \times 1 =$	$0 \times 5 =$	$4 \times 0 =$	$1 \times 0 =$

Study Chart 3. Multiplication

1 0	5 0	3 0	4 0	2 0
0 1	0 5	0 3	0 4	0 2
0 0	0 0	0 0	0 0	0 0
6 0	9 0	0	8 0	7 0
0 6	0 9	0	0 8	0 7
0 0	0 0	0	0 0	0 0

Any number $\times$ 0 = 0.
0 $\times$ any number = 0.

Using Zero in Multiplication

Sue is to take 2 pounds of cookies to a picnic. The kind she wants to take costs 30¢ a pound. How much money does she need for them?

30¢	$2 \times 0 = 0$. Write 0 under the 2.
2	$2 \times 3 = 6$. Write 6 under the 3.
60¢	Sue needs 60 cents.

See how quickly you can find the products:

	a	b	c	d	e	f	g	h
1.	40	10	30	20	10	10	10	10
	2	3	2	4	9	7	8	5
2.	23	42	21	34	32	40	10	43
	3	2	4	2	3	2	4	2
3.	21	22	23	34	42	11	32	13
	3	4	3	2	2	5	3	4

Problems

4. Jane and May each bought a pencil box which cost 20¢. How much did the 2 boxes cost?

***5.** "A week from next Saturday, show me 24 cents that you have saved, and I'll give you twice as much," John's father told him. How much would his father give him?

***6.** With the money from his father, how much would John have altogether?

***7.** Sara's father told her that if she would save 30¢ in 2 weeks, he would give her three times as much to put with it. How much would he give her?

Multiplying a Whole Number by Ten

"Can you tell how many cents you have when you know how many dimes you have?" Ann asked.

"Yes," Sylvia said, "I know that without writing the numbers. I think of the number of dimes; then, the number of cents is that number with a zero after it. 1 dime = 10¢, 2 dimes = 20¢, 5 dimes = 50¢, and so on."

$10 \times 5 = 50$, or 5 with a zero at the right.
$10 \times 7 = 70$, or 7 with a zero at the right.
$10 \times 8 = 80$, or 8 with a zero at the right.

When we write a zero after a number, we say that we *annex* a zero to the number.

To multiply any whole number by 10, annex a zero.

Give the products:

	a	b	c
1.	$10 \times 2 =$	$10 \times 6 =$	$10 \times 1 =$
2.	$10 \times 4 =$	$10 \times 7 =$	$10 \times 3 =$
3.	$10 \times 9 =$	$10 \times 5 =$	$10 \times 8 =$

4. Count by 10's to 100.

$10 \times 2 = 20$ and $2 \times 10 = 20$.

Give the products quickly:

5.	$5 \times 10 =$	$4 \times 10 =$	$8 \times 10 =$
6.	$9 \times 10 =$	$7 \times 10 =$	$3 \times 10 =$
7.	$2 \times 10 =$	$1 \times 10 =$	$6 \times 10 =$

8. Ice-cream bars cost 10¢ each. What will 5 bars cost? What will 6 bars cost? What will 8 bars cost?

9. Special delivery stamps for letters cost 10¢ each. What will 3 of them cost? What will 7 cost?

10. How many cents in 5 dimes? In 10 dimes?

Tulip Time

1. Dorothy's mother sent an order for 2 dozen pink tulip bulbs. How many bulbs did she order?

2. Martha picked 3 bouquets of tulips, with 12 tulips in each bouquet. In all how many did Martha pick?

3. Martha's teacher bought 18 tulips at one store and 19 at another. How many tulips did she buy?

4. The tulips from one store cost Martha's teacher $1.35 and those from the other store cost $1.65. How much did all of the tulips cost?

5. How much less did Martha's teacher pay for tulips at one store than at the other?

6. Leone has 8 tulips and 2 vases. She wants to divide the flowers equally. How many should she put in each vase?

7. Mrs. Evans gave Donald, Sam, and Glen each 21¢ for watering her tulip beds. How much did she pay for the job?

Some New Multiplication Facts

Look at the chart below if you need help.

1. The milkman left 2 bottles of milk at our door each morning for a week. How many bottles of milk did he leave us that week?

2. Three nickels are equal to how many pennies?

3. Nine boys are needed to make one baseball team. Then for two baseball teams how many boys will be needed?

4. In 2 weeks there are 2 × __ days, or __ days.

Write only the products:

	a	b	c	d	e	f	g	h
5.	6	3	2	3	8	2	6	3
	2	5	7	6	2	9	3	4

Notice that the products in each box below are the same. Make a silent-helper for each fact. Then you should have a silent-helper for each multiplication fact with a product smaller than 20.

Study Chart 4. Multiplication

6	2	5	3	4	3	6	3
2	6	3	5	3	4	3	6
12	12	15	15	12	12	18	18
7	2	8	2	2	9	4	
2	7	2	8	9	2	4	
14	14	16	16	18	18	16	

Oral Problems

1. Mother said, "Lucy, you should plan to do something each day of your 2-weeks' vacation." For how many days should Lucy make plans?

2. Ned found 6 nests with 3 eggs in each. Did he find more or fewer than a dozen eggs?

3. How much will 9 lollipops cost at 2 cents each?

4. There are 5 school days in one week. How many school days are there in 3 weeks?

5. How many quarters equal a dollar? Four dollars equal how many quarters? Three dollars equal how many quarters?

6. How many half dollars should you get in change for 8 dollar bills?

7. Mr. Todd wants to put 7 quarts of milk into pint bottles. How many bottles does he need?

8. Last summer Ralph worked on his uncle's farm for 6 weeks. He earned $3 a week. How much did he earn altogether?

9. Grandfather Brown said to Joan, Fanny, and Sue, "I'll give each of you 6 plums if you tell me how many plums I must pick for you." How many would you tell him to pick?

10. Jim and Leon were helping some men find golf balls. The men paid the boys 10 cents for each ball the boys found. Jim found 4 and Leon found 5. How much money should each boy get?

11. Mr. Swan will sell David 2 collie dogs for $9 each. How much will the 2 dogs cost?

12. How much will three 5¢ ice-cream cones cost?

A New Step in Multiplication

Tim went with his father, mother, and sister to spend Sunday at his grandfather's. The distance from Tim's home by auto road is 63 miles one way. How far did they drive both ways?

$$\begin{array}{r} 63 \\ \times 2 \\ \hline 126 \end{array}$$

$2 \times 3 = 6$. Write 6 under the 2.
$2 \times 6 = 12$. Write 2 under the 6, and write 1 to the left, as shown.
They drove 126 miles both ways.

Multiply and check by going over your work:

	a	b	c	d	e	f	g	h
1.	54	83	62	91	70	64	53	92
	2	2	2	2	2	2	2	2
2.	60	52	81	73	90	84	61	50
	2	2	2	2	2	2	2	2
3.	82	94	72	51	93	80	71	74
	2	2	2	2	2	2	2	2

4. For a school picnic, the bus man said he could send buses that would each hold 24 children. How many children will 2 of the buses hold?

5. Harry's mother bought 2 sacks of oats for her chickens. Each sack of oats weighed 80 pounds. How many pounds were in the two sacks?

6. Walter bought 3 dozen eggs at 32 cents a dozen for his mother. How much should Walter pay for the eggs?

An Auto Trip

From a road map, Charles and his father planned an auto trip of about 962 miles.

1. The first day they drove 187 miles; the second day, 193 miles; and the third day, 205 miles. Then they had traveled how many miles?

2. They still had how many miles to drive?

3. The fourth morning Charles' father said, "If we drive for 6 hours and go 30 miles an hour, how many miles shall we drive today?" What is your answer?

4. They drove from 8 o'clock in the morning until 5 in the afternoon, excepting a stop of two hours for lunch. How many hours did they drive?

5. They drove at the rate of 30 miles an hour and traveled how many miles that day?

6. On the fifth day they expected to drive 167 miles. Because part of the road was closed, they had to drive 28 miles farther in going around. In all they drove how many miles that day?

How to Multiply Three-Figure Numbers

Alice lives 123 miles from her grandmother's. This summer she is going to visit her cousin, Helen. Alice's mother says that it is 3 times as far to Helen's house as it is to grandmother's. How many miles is it to Helen's?

```
123
  3
369
```

$3 \times 3 = 9$. Write 9 under the 3.
$3 \times 2 = 6$. Write 6 under the 2.
$3 \times 1 = 3$. Write 3 under the 1.
It is 369 miles to Helen's.

Milo said, "I have 310 little chicks."
David said, "Oh! I have just twice that many."
How many chicks has David?

```
310
  2
620
```

$2 \times 0 = 0$. Write 0 under the 2.
$2 \times 1 = 2$. Write 2 under the 1.
$2 \times 3 = 6$. Write 6 under the 3.
David has 620 chicks.

Multiply and check by going over your work:

	a	b	c	d	e	f
1.	411 × 2	423 × 2	222 × 4	430 × 2	120 × 4	410 × 2
2.	213 × 3	234 × 2	230 × 3	212 × 3	240 × 2	333 × 3
3.	201 × 3	200 × 3	102 × 4	300 × 2	303 × 3	101 × 8

Checking Up on Multiplication by Two

Now you have studied all the multiplication facts with 2.

See how quickly you can give the products below:

0	1	2	3	4	5	6	7	8	9
2	2	2	2	2	2	2	2	2	2

If there is any product above that you are not sure of, study it again. If you make a mistake in one fact the answer to a problem will be wrong.

Flash Card Test

Number your paper for 10 answers.

Will you be ready if your teacher flashes, or holds up for just a moment, a large card showing one of the multiplication facts above? You will have only enough time to write the product quickly before you must look at the next card. Make a little circle on your paper in place of any product that you do not remember.

Change papers as your teacher directs. While your teacher, or a pupil, reads the correct answers, make a check mark (√) after each correct product. Count the number right and place that number at the top of the paper. Study again any fact that you did not know.

A Puzzle

Draw 18 little circles to show:

$6 \times 3 = 18$ $3 \times 6 = 18$ $2 \times 9 = 18$ $9 \times 2 = 18$

Checking Up on Multiplication

First work the test examples in each row; then check. If you make a mistake in any test example, you need more practice on that kind. Correct your mistake and then work the practice examples in that row.

	Test		Practice			
	a	b	c	d	e	f
1.	24 × 2	43 × 2	32 × 2	14 × 2	42 × 2	44 × 2
2.	30 × 2	40 × 2	10 × 2	40 × 2	30 × 2	20 × 2
3.	81 × 2	54 × 2	72 × 2	61 × 2	94 × 2	83 × 2
4.	243 × 2	431 × 2	324 × 2	132 × 2	213 × 2	423 × 2
5.	430 × 2	320 × 2	140 × 2	210 × 2	430 × 2	340 × 2
6.	304 × 2	201 × 2	103 × 2	101 × 2	404 × 2	302 × 2

7. How much load would Jess have on his wagon if he tried to haul 9 watermelons to the school picnic when each watermelon weighs 20 pounds?

Fun with Numbers

What pairs of numbers multiplied together make 12? 16? 10? 18? 6? 14? 8? 4? 2? 1?

On your paper make as many different examples as you can using the numbers in rows 1 and 2 below.

This is what Ralph did with the numbers of example 1 a:

a. He added: $\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array}$ $\begin{array}{r} 2 \\ +6 \\ \hline 8 \end{array}$ **b.** He subtracted: $\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array}$

c. He multiplied: $\begin{array}{r} 6 \\ \times 2 \\ \hline 12 \end{array}$ $\begin{array}{r} 2 \\ \times 6 \\ \hline 12 \end{array}$ **d.** He divided: 3 $2\overline{)6}$

e. He checked each example.

	a	b	c
1.	6 and 2	2 and 2	4 and 4
2.	2 and 4	3 and 6	8 and 2

Write the numbers that are missing in these examples:

3.	$2 \times .. = 4$	$3 \times .. = 6$	$2 \times .. = 10$
4.	$.. \times 4 = 8$	$7 \times .. = 14$	$.. \times 8 = 16$
5.	$2 \times .. = 12$	$1 \times .. = 2$	$9 \times .. = 18$
6.	$8 \times .. = 16$	$.. \times 2 = 12$	$.. \times 7 = 14$
7.	$2 \times .. = 2$	$2 \times .. = 0$	$0 \times .. = 0$
8.	$1 \times .. = 0$	$1 \times .. = 1$	$5 \times .. = 10$
9.	$7 \times 2 = ..$	$2 \times 9 = ..$	$0 \times 2 = ..$
10.	$1 \times 1 = ..$	$0 \times 0 = ..$	$4 \times .. = 8$

Some New Division Facts

1. Martin has 15 pennies that he wants to change for nickels. How many nickels should he get for them?

2. Last summer, the Davis family camped at a lake for 14 days. Gertrude told her teacher, "We camped at the lake for ____ whole weeks."

3. If 2 children use one song book, how many song books will be needed for 18 children?

Give the answers to these division examples. If you are not sure of a new quotient, look at the chart below.

	a	b	c	d	e	f
4.	$3\overline{)12}$	$2\overline{)14}$	$2\overline{)16}$	$3\overline{)15}$	$4\overline{)12}$	$3\overline{)18}$
5.	$7\overline{)14}$	$5\overline{)15}$	$6\overline{)12}$	$9\overline{)18}$	$8\overline{)16}$	$2\overline{)12}$
6.	$2\overline{)18}$	$2\overline{)10}$	$9\overline{)\ 9}$	$2\overline{)\ 8}$	$5\overline{)10}$	$3\overline{)15}$
7.	$2\overline{)14}$	$4\overline{)16}$	$7\overline{)14}$	$5\overline{)15}$	$3\overline{)\ 9}$	$4\overline{)\ 8}$

Make a silent-helper for each fact. Study together the facts in each box.

Study Chart 3. Division

6 $2\overline{)12}$	2 $6\overline{)12}$	5 $3\overline{)15}$	3 $5\overline{)15}$	4 $3\overline{)12}$	3 $4\overline{)12}$	6 $3\overline{)18}$	3 $6\overline{)18}$
7 $2\overline{)14}$	2 $7\overline{)14}$	8 $2\overline{)16}$	2 $8\overline{)16}$	9 $2\overline{)18}$	2 $9\overline{)18}$	4 $4\overline{)16}$	

Improving by Practice

1. For every magazine that Archie sells he may keep 2¢. Yesterday he sold 8 magazines. How much may he keep for selling them?

2. Jane's mother asked her to mail 3 heavy letters. Jane had to put 6 cents in stamps on each letter. How much postage did she pay for all the letters?

3. Jane gave the man in the post office a quarter. How much change did she get?

4. Jane got 3 pieces of money for change. What do you suppose the coins were?

5. The man at the pony farm said, "2 little children can ride on one pony. There are 16 little children here. Bring out _____ ponies."

Addition

	a	b	c	d	e	f
6.	632 183	478 397	509 68	93 198	412 106	800 190

Subtraction

7.	321 179	200 63	788 509	460 152	880 590	587 496

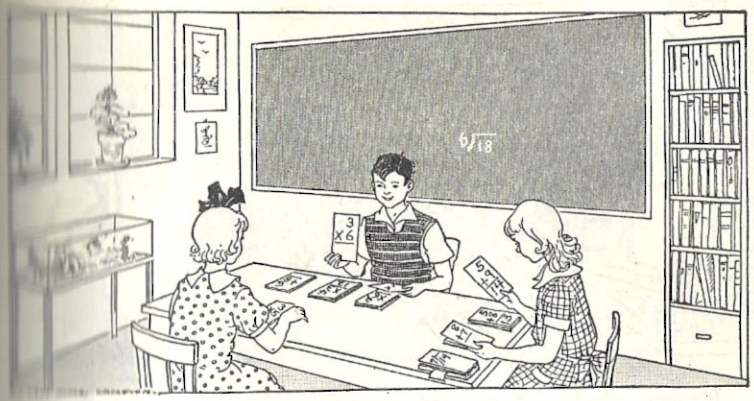
Multiplication

8.	21 8	332 3	204 2	102 4	110 9	93 9

Division

9.	$6\overline{)18}$	$2\overline{)14}$	$5\overline{)15}$	$3\overline{)12}$	$3\overline{)18}$	$4\overline{)16}$
10.	$2\overline{)12}$	$3\overline{)15}$	$7\overline{)14}$	$8\overline{)16}$	$3\overline{)\ 9}$	$9\overline{)\ 9}$

Review with Silent-Helpers



1. Have somebody test you with your 100 subtraction silent-helpers. Then study again any facts that were hard for you to remember.

Keep the silent-helpers that you *know* and those that you *do not know* in separate packs.

2. Have somebody test you with your 100 addition silent-helpers. Then study again any facts that were hard for you to remember.

3. You should have 59 silent-helpers for the multiplication facts that you have studied. Have somebody test you with them to find which you need to study further.

4. You should have 40 silent-helpers for the division facts that you have studied. Have somebody test you to find which of them you need to study further.

5. Think of any number between 10 and 39. To that number, add each number below:

4 7 1 3 0 5 2 6 9 8

A Flower Show

Every child in a third-grade class brought flowers for a flower show.

Four girls went out to pick wild flowers for the show.

1. Betty, Nan, and Beatrice picked violets. Each picked until she had 60 violets. How many violets did the 3 girls pick?

2. Five children brought pink roses. Mary brought 4; Dora, 7; Billie, 6; Dan, 9; and Laura, 5. How many pink roses were brought for the show?

3. Lee brought 39 sweet peas, and George, 46. How many more sweet peas did George bring than Lee? How many did both boys bring?

***4.** Marie found a jack-in-the-pulpit. When she took it to school, only 6 of the 36 children in the room had seen one before. Marie told her mother, "____ children in our room had never seen a jack-in-the-pulpit."

A School Party

1. We had to plan for all who were coming to our party. There were 37 fourth-grade pupils, 38 third-grade pupils, 8 teachers, and 16 mothers coming. We had to plan for how many people?

2. We decided to have popcorn balls and paper boxes filled with candy. One day we made 76 of the boxes but we wanted to make 125. We had to make how many more boxes?

3. Two large pails of candy that we bought for $3.23 each cost us how much?

4. At 32¢ a dozen, 2 dozen popcorn balls cost ____.

5. How much should we pay for 2 flowering plants at $1.20 each?

6. Four silk flags at $.30 each cost how much?

7. The plants and flags together cost how much?

***8.** Frank brought 27 popcorn balls, Lois brought 45, and Edith brought 18. Then Harold said, "If we buy 2 dozen more popcorn balls, we shall have more than enough for all." Was he right?

Practice Tests in Addition

How many examples in each test can you work and check in the time given? Write only the answers.

Test A. (Time 2 min.)

	a	b	c	d	e
1.	3	1	5	4	0
	4	0	0	2	4
	2	8	6	3	5
2.	5	3	2	1	3
	4	3	6	5	0
	5	8	7	9	8
3.	0	3	3	5	6
	7	6	5	2	2
	4	6	3	9	4

Test B. (Time 3 min.)

	a	b	c	d	e
4.	5	4	9	4	5
	9	6	7	9	8
	4	9	7	9	7
5.	9	4	8	8	7
	4	8	5	6	5
	2	7	1	3	8
6.	7	8	7	9	7
	8	9	6	8	9
	9	7	5	3	8

Test C. (Time 4 min.)

	a	b	c	d
7.	25	24	10	29
	43	50	13	20
8.	60	20	86	48
	60	91	5	2
9.	59	22	48	29
	12	18	48	39
10.	64	49	45	75
	47	93	87	99

Test D. (Time 5 min.)

	a	b	c	d
11.	62	34	40	97
	10	61	36	50
	59	65	83	45
12.	29	40	78	96
	51	88	30	31
	72	89	16	96
13.	558	89	392	780
	81	415	85	807
	27	3	502	97

Practice Tests in Subtraction

How many examples in each test can you work and check in the time given? Write only the answers.

Test A. (Time 3 min.)

	a	b	c	d
1.	89	76	59	68
	36	54	24	56
2.	69	44	98	79
	32	23	32	25
3.	97	78	90	36
	74	35	10	30
4.	51	75	91	48
	10	70	61	3

Test B. (Time 4 min.)

	a	b	c	d
5.	275	307	124	$.96
	105	106	21	.56
6.	$6.80	$7.30	115	92
	4.80	5.00	54	44
7.	70	70	40	82
	29	15	21	3
8.	98	53	41	82
	79	7	33	77

Test C. (Time 4 min.)

	a	b	c	d
9.	176	895	539	822
	38	19	268	190
10.	992	642	408	761
	405	508	346	54
11.	115	111	410	522
	23	89	237	466
12.	810	649	913	409
	26	279	505	20

Test D. (Time 4 min.)

	a	b	c	d
13.	$9.05	$6.10	820	757
	6.05	5.80	372	499
14.	774	344	936	955
	675	96	829	47
15.	807	804	400	800
	348	428	176	203
16.	300	900	943	865
	73	537	284	768

Keeping in Practice

Copy these examples and subtract:

	a	b	c	d	e	f
1.	467 234	856 546	743 442	535 335	$5.50 2.50	$6.05 4.05
2.	387 265	294 65	145 73	156 48	$1.58 .95	$2.75 .69
3.	925 470	631 364	$4.25 1.25	$3.65 2.60	$2.48 1.29	$5.59 4.68
4.	$8.53 6.75	$2.75 1.89	$5.81 1.90	$6.57 5.83	(e) $5.25 − $1 (f) $5 − $2.50	

Copy these examples and multiply:

5.	302 4	600 3	904 2	420 4	301 5	310 6
6.	430 3	200 5	201 7	210 8	503 3	730 3

7. Edward counted 9 teams of horses working on the road near his home. There were 2 horses in each team. How many horses were there?

8. Harry got 14 dollars for 7 puppies that he sold. The price for each of the puppies was the same. How much did Harry get for each?

9. Fred heard his mother say, "We use 3 quarts of milk a day." Fred thought, "Then we use 7 × 3 quarts or ____ quarts a week."

The Grocery

1. At the grocery, Ray bought grapefruit for 25¢, cookies for 14¢, potatoes for 21¢, and celery for 9¢. How much was his bill?

2. Ray gave the man at the grocery $1.00 to pay his bill. How much should his change have been?

*3. Tom bought 2 apples for a dime. Carl bought 15¢ worth of apples of the same kind and size. Carl got how many apples?

Write only the differences:

	a	b	c	d	e	f
4.	$7.20 3.15	$4.50 2.47	$6.70 4.65	$3.80 1.74	$2.10 1.05	$4.30 1.23
5.	$3.08 2.68	$6.04 2.34	$7.07 3.77	$9.06 7.46	$8.05 5.55	$4.03 1.23
6.	$6.00 2.35	$5.00 2.50	$3.00 1.75	$8.00 4.50	$5.69 4.79	$9.00 5.85
7.	$1.25 .26	$2.00 .69	$5.05 4.50	$7.30 6.45	$7.00 2.98	$5.00 1.37

How to Divide Larger Numbers

Alice, Helen, and Ruth are going to buy a book to give to their mother. The book they have chosen will cost 69¢. If each girl brings the same amount, what will Ruth's share be?

To find Ruth's share, divide 69¢ by 3.
3 in 6, 2 times.
Write 2 just above the 6.
3 in 9, 3 times.
Write 3 just above the 9.
Ruth's share will be 23¢.

$$3\overline{)69¢}\quad 23¢$$

Check:
$$\begin{array}{r} 23¢ \\ \times 3 \\ \hline 69¢ \end{array}$$

Each night Mr. Duncan put his pennies into a bank at home. On the Fourth of July he opened the bank to divide the pennies equally between his children, Allen and Joan. There were 486 pennies. How many should Joan get?

2 in 4, 2 times.
Write 2 just above the 4.
2 in 8, 4 times.
Write 4 just above the 8.
2 in 6, 3 times.
Write 3 just above the 6.
Joan should get 243 pennies.

$$2\overline{)486¢}\quad 243¢$$

Check:
$$\begin{array}{r} 243¢ \\ \times 2 \\ \hline 486¢ \end{array}$$

Which examples below are worked correctly?

1. $2\overline{)246}\quad 123$ Check: $\begin{array}{r} 123 \\ \times 2 \\ \hline 246 \end{array}$

2. $3\overline{)963}\quad 321$ Check: $\begin{array}{r} 321 \\ \times 3 \\ \hline 963 \end{array}$

3. $4\overline{)844}\quad 212$ Check: $\begin{array}{r} 212 \\ \times 4 \\ \hline 848 \end{array}$

Using What You Have Learned

Divide and write the quotients:

	a	b	c	d	e	f
1.	$2\overline{)42}$	$3\overline{)93}$	$4\overline{)48}$	$5\overline{)55}$	$3\overline{)36}$	$2\overline{)46}$
2.	$9\overline{)99}$	$2\overline{)28}$	$3\overline{)69}$	$4\overline{)88}$	$3\overline{)63}$	$2\overline{)82}$
3.	$2\overline{)264}$	$3\overline{)639}$	$4\overline{)484}$	$6\overline{)666}$	$2\overline{)462}$	$3\overline{)936}$
4.	$3\overline{)96}$	$4\overline{)448}$	$4\overline{)848}$	$2\overline{)68}$	$3\overline{)336}$	$5\overline{)555}$

Work these problems:

5. What is the difference in price between a doll costing $3.98 and one costing $5.59?

6. Fifty-five cents is equal to how many nickels?

7. Stanley and John bought a bag of 46 marbles. They shared them equally. How many marbles did each boy get?

8. Betty bought 3 pencils at 5¢ each, a pad for 8¢, an eraser for 4¢, and a box of paints for 35¢. She paid how much for all of them?

9. Billy has saved $3.79 to buy a $5.00 electric train. He needs how much more?

10. Jim paid $4.95 for a sweater and $.89 for socks to match. He paid how much for all?

11. Four dozen roses are how many roses?

12. Three feet equal how many inches?

13. Steve pulled 88 carrots from his garden. The store man said to tie 8 carrots in a bunch. How many bunches could Steve make?

Two Uses of Zero

Work these review examples:

1.	5	5	0	5	0	4
	+0	−0	+5	−5	×4	×0

Copy, and fill the blanks:

2. 3 = ____ ones

3. 30 = ____ tens ____ ones

4. 300 = ____ hundreds ____ tens ____ ones

5. 306 = ____ hundreds ____ tens ____ ones

6. 330 = ____ hundreds ____ tens ____ ones

From the work above, you see it is true that: Zero means *no*, *not any*, or *none*. Also when zero is used alone, it has no value as a number. Zero is sometimes used to keep other figures in their places. For example, in the number 30 there are no ones, so to keep the 3 in ten's place and to show that there are no ones, the zero is written in one's place.

7. Why are the two zeros written in the number 300?

8. What does the zero do in the number 306? the number 330?

Write the following numbers and tell why you have used the zeros:

9. Fifty, two hundred, four hundred eight, three hundred sixty, seven hundred, seventy, two hundred five, six hundred eighty, twenty.

Practice

Do what the signs tell you to do:

	a	b	c	d	e	f
1.	74	55	67	87	23	
	+28	+98	−51	−43	× 3	5)155
2.		0		104	71	63
	6)246	× 7	8)16	− 93	+78	−13
3.	44		16		76	9
	× 2	4)128	+41	4)12	−50	× 0

Dividing Zero

If you have no, or zero (0), pieces of candy and divide zero pieces of candy among 3 children, each child will get no, or zero (0), pieces. Your answer will be the same if you divide zero by any other number.

$3\overline{)0}$ Check: $3 \times 0 = 0$, so you know your quotient is correct.

Copy these examples and write the quotients: Check.

1)0 3)0 6)0 2)0 4)0 8)0 5)0 9)0 7)0

Make a silent-helper for each division fact on the study chart below.

Study Chart 4. Division

0	0	0	0	0	0	0	0	0
2)0	6)0	8)0	9)0	1)0	4)0	7)0	5)0	3)0

Divide 0 by any number, and the quotient is 0.

Using Zero in Division

Robert has a new 408-page book. How many pages has he read when he is halfway through his book?

$$\begin{array}{r} 204 \\ 2\overline{)408} \end{array}$$

To find $\frac{1}{2}$ of 408, divide 408 by 2.
2 in 4, 2 times. Write 2 just above the 4.
2 in 0, 0 times. Write 0 just above the 0.
2 in 8, 4 times. Write 4 just above the 8.
He has read 204 pages.

Check:
$$\begin{array}{r} 204 \\ \times 2 \\ \hline 408 \end{array}$$

Raymond and Neil bought a box of 240 apples to sell at a picnic. When the picnic was not held because of rain, the boys shared the apples equally. What was each boy's share?

$$\begin{array}{r} 120 \\ 2\overline{)240} \end{array}$$

2 in 2, 1. Write 1 just above the 2.
2 in 4, 2. Write 2 just above the 4.
2 in 0, 0. Write 0 just above the 0.
Each boy's share was 120 apples.

Check:
$$\begin{array}{r} 120 \\ \times 2 \\ \hline 240 \end{array}$$

Divide and check:

	a	b	c	d	e
1.	$2\overline{)46}$	$2\overline{)642}$	$2\overline{)420}$	$2\overline{)802}$	$2\overline{)200}$
2.	$2\overline{)88}$	$2\overline{)488}$	$2\overline{)840}$	$2\overline{)604}$	$2\overline{)800}$
3.	$2\overline{)26}$	$2\overline{)264}$	$2\overline{)660}$	$2\overline{)408}$	$2\overline{)600}$
4.	$2\overline{)62}$	$2\overline{)826}$	$2\overline{)280}$	$2\overline{)202}$	$2\overline{)400}$
5.	$2\overline{)44}$	$2\overline{)864}$	$2\overline{)440}$	$2\overline{)806}$	$2\overline{)200}$

Checking Up on Division

$$\begin{array}{r} 7 \text{ quotient} \\ \text{divisor } 2\overline{)14} \text{ dividend} \end{array}$$

Look in the box above to find the word or number to read in place of each blank below:

1. When you divide, the answer is called the ____.
2. The quotient in the example above is ____.
3. 2 is the _____ in the example above.
4. Fourteen is the _____ in the example above.
5. You divide the _____ by the _____ to get the _____.
6. To check your answer in division, you multiply the quotient by the _____. If the product of that multiplication is the same as the _____, you say that your answer checks.

Test on Facts with the Divisor 2

7. Copy these examples, divide, and check:

$2\overline{)0}$ $2\overline{)2}$ $2\overline{)4}$ $2\overline{)6}$ $2\overline{)8}$ $2\overline{)10}$ $2\overline{)12}$ $2\overline{)14}$ $2\overline{)16}$ $2\overline{)18}$

8. If you are not ready for a Flash Card Test, study again the facts that are hard for you.

Finding One-Half

9. To find $\frac{1}{2}$ of a number, divide the number by ___.
10. One-half of 18 is equal to 18 divided by ____.
11. $\frac{1}{2}$ of 10 = $_\overline{)10.}$
12. $\frac{1}{2}$ of 16 = $2\overline{)__}$.
13. One-half of 12 = ___.
14. 3 is $\frac{1}{2}$ of ___.
15. How many are $\frac{1}{2}$ doz. peaches? roses?
16. How many inches in $\frac{1}{2}$ ft.?

Testing Your Progress

These tests are on examples that you have had. The examples in each box are of the same kind. Try to get all the answers right and check them in the time allowed.

Multiplication: (Time after copying, 2 min.)

a.	34 × 2	21 × 4	23 × 3	**b.**	10 × 5	40 × 2	10 × 6
c.	63 × 3	42 × 4	31 × 5	**d.**	321 × 3	412 × 2	234 × 2
e.	230 × 3	610 × 1	410 × 2	**f.**	201 × 4	101 × 7	304 × 2

Division: (Time after copying, 3 min.)

g.	$3\overline{)18}$	$4\overline{)12}$	$2\overline{)16}$	**h.**	$2\overline{)46}$	$3\overline{)93}$	$4\overline{)48}$
i.	$3\overline{)693}$	$2\overline{)286}$	$4\overline{)488}$	**j.**	$4\overline{)840}$	$2\overline{)620}$	$3\overline{)360}$
k.	$2\overline{)802}$	$4\overline{)408}$	$3\overline{)909}$	**l.**	$5\overline{)500}$	$2\overline{)800}$	$3\overline{)900}$

Standards

	Excellent	Good	Fair	Poor
Multiplication	18 right	17	15 or 16	Fewer than 15
Division	18 right	17	15 or 16	Fewer than 15

Progress Test on Problems

(Time 10 minutes)

1. Alice now weighs 65 pounds. A year ago she weighed only 58 pounds. How many pounds did she gain in the year?

2. For lunch Edwin bought a glass of milk for 5¢, corn for 6¢, a roll for 4¢, a piece of cake for 5¢, and an apple for 3¢. How many cents did he spend for his lunch?

3. Before Helen went down town she had $.75. When she came home she had $.37. How much money had she spent?

4. The 9 boys on a baseball team want to buy baseball suits. Each suit will cost $2.10. How much will all of the suits cost?

5. Three boys sold some old iron for 60¢. How many cents should each get if they share the money equally?

6. The Wests started to grandmother's at

They reached grandmother's at

How long did it take them to make the trip?

Standards

Excellent	Good	Fair	Poor
6 right	5 right	4 right	1, 2 or 3 right

CHAPTER IV

Children's Books

1. Mary has 28 books of stories about people; 6 books of poems; 13 books about animals; 1 book of games; and 3 drawing books. She has how many books altogether?

2. Mark wants to read 3 books. Each of the books has 120 pages. How many pages will he have to read?

3. Franklin has saved $2.88. How much more does he need to buy a set of 3 books for $3.75?

4. Last summer, Ella read one book of 155 pages, one of 299 pages, one of 189 pages, and another book of 265 pages. She read how many pages?

5. Anne is reading a 168-page book. She has read 75 pages. How much more or less than half of the book has she read?

Another New Step in Division

Sam, Tom, and Joe found they had taken in 126 pennies at their show in Sam's garage. How many should each get if they divide the pennies equally?

		Check:
	3 is not contained in 1.	
42	3 in 12, 4 times. Write 4 above the 2.	42
3)126	3 in 6, 2 times. Write 2 above the 6.	×3
	Each boy should take 42 pennies.	126

Divide. Write only the quotients. Check.

	a	b	c	d	e	f
1.	6)12	4)12	4)16	5)15	8)16	3)12
2.	5)10	7)14	2)14	3)15	6)18	2)10
3.	9)18	2)12	2)16	3)18	2)18	8)0
4.	6)126	4)124	5)155	8)168	3)126	5)105
5.	7)147	2)144	2)146	2)148	2)142	8)808
6.	4)160	3)609	4)128	3)156	6)186	3)183
7.	2)206	5)150	9)189	2)486	4)488	5)100
8.	7)140	4)168	8)160	2)100	3)153	2)166
9.	3)189	2)108	6)120	9)180	8)160	4)120
10.	4)804	2)180	7)770	3)609	4)164	5)505

Playing with Soldiers

1. Uncle Jim gave Billy, Fred, and Jack 123 lead soldiers. The soldiers were divided equally. Jack said, "Each of us should have _____ soldiers."

Divide:

	a	b	c	d	e	f
2.	4)848	5)505	6)180	7)707	4)164	2)18
3.	2)120	3)153	7)777	4)128	3)129	2)16
4.	3)159	4)168	2)122	3)123	2)164	3)18
5.	2)162	3)903	5)105	6)120	2)186	3)18
6.	4)404	5)150	2)124	2)188	2)128	2)16

Multiply:

7.	212 × 4	201 × 5	300 × 6	301 × 5	410 × 4	30 ×
8.	602 × 3	200 × 8	403 × 3	201 × 7	500 × 3	63 ×

How to Carry in Multiplication

Tony's mother gets a quart of milk each morning. One quart costs 12¢ where Tony lives. How much will 7 quarts cost?

$$\begin{array}{r} 12¢ \\ \times\ 7 \\ \hline 84¢ \end{array}$$

$7 \times 2 = 14$. Write 4 under the 7 and carry the 1 in mind for a moment.
$7 \times 1 = 7$, and 1 carried, $= 8$.
Write 8 under the 1.
7 quarts will cost 84¢.

To check, cover your work and multiply again.

Are the products correct?

	a	b	c	d	e	f	g	h
1.	12 × 8 = 96	13 × 6 = 78	23 × 4 = 92	45 × 2 = 90	36 × 3 = 108	33 × 5 = 165	24 × 4 = 96	59 × 2 = 118

Without using a pencil, multiply, and add 1 to each product:

2.	2 × 4	8 × 2	1 × 8	7 × 2	4 × 2	6 × 3	3 × 5	2 × 6

Copy these examples; then multiply:

3.	24 × 4	19 × 2	36 × 2	45 × 2	25 × 3	38 × 2	47 × 2	69 × 2
4.	12 × 8	23 × 5	23 × 6	34 × 3	22 × 7	43 × 4	98 × 2	65 × 3

5. Lucy put 22 lemon drops into each package for the candy sale. How many lemon drops would she put into 7 packages?

Dollars and Cents in Multiplication

David bought a collie puppy from Mr. Webb who lives next door. Mr. Webb said that David could pay 30 cents a week for 6 weeks. How much will the puppy cost?

\$ .3 0	Put a cents' point (.) and a dollar sign (\$)
6	before the 30 to show that it is cents.
\$1.8 0	Then multiply as with other numbers.
	What shows the answer is one dollar and 80 cents?

1. Fred earned 25 cents a day for 3 days. How much did he earn?

2. How much will 3 dozen oranges cost at 55 cents a dozen?

3. Mr. Black said, "Billy, I'll take you and your two cousins to the circus. My ticket will cost \$1.00, but your tickets will cost 50¢ each. How much money shall we need for tickets?" What should Billy have said?

4. Ben counted 22 seats in a row. There were 8 rows. How many people could be seated?

Multiply and check:

	a	b	c	d	e	f
5.	\$.43	\$.60	\$.75	\$.86	\$.34	\$.23
	4	3	2	2	4	5
6.	\$.22	\$.33	\$.40	\$.55	\$.90	\$.85
	9	6	3	3	2	9
7.	65¢	70¢	\$.98	\$.36	40¢	\$.49
	3	2	2	3	4	9

Practice in Multiplication

Work these examples without using a pencil:

For example: $4 \times 2 + 1 = ?$ First multiply 4×2; then to the product, 8, add 1. The answer is 9.

	a	b	c	d
1.	$2 \times 1 + 1$	$5 \times 1 + 1$	$2 \times 4 + 1$	$2 \times 2 + 1$
2.	$8 \times 1 + 1$	$3 \times 2 + 1$	$3 \times 3 + 1$	$2 \times 3 + 1$
3.	$7 \times 2 + 1$	$6 \times 3 + 1$	$2 \times 9 + 1$	$2 \times 5 + 1$
4.	$5 \times 2 + 1$	$8 \times 2 + 1$	$3 \times 4 + 1$	$4 \times 4 + 1$
5.	$2 \times 6 + 1$	$3 \times 5 + 1$	$2 \times 8 + 1$	$2 \times 7 + 1$
6.	$4 \times 3 + 1$	$3 \times 6 + 1$	$4 \times 2 + 1$	$5 \times 3 + 1$
7.	$6 \times 2 + 1$	$9 \times 1 + 1$	$7 \times 0 + 1$	$9 \times 2 + 1$

	a	b	c
8.	Six and 1 =	Twelve and 1 =	Eight and 1 =
9.	Ten and 1 =	Fourteen and 1 =	Seven and 1 =
10.	Nine and 1 =	Eighteen and 1 =	Sixteen and 1 =

Multiply. Go over your work carefully to check.

	a	b	c	d	e	f	g
11.	22	34	18	43	12	13	21
	5	4	2	4	7	6	9
12.	22	32	42	36	68	47	59
	6	5	4	3	2	2	2
13.	55	45	76	33	22	22	22
	3	2	2	6	9	8	7
14.	24	13	56	46	89	43	57
	3	5	3	3	2	4	2

New Facts to Learn

1. For washing the dishes all by herself, Marie gets 3¢. How much will Marie earn if she does the dishes by herself 7 times?

2. Agnes bought 8 colored pencils. She paid 3 cents for each. How much did the pencils cost her?

3. At 6¢ each, how much must John pay for 4 oranges?

4. Four nickels are equal to how many cents?

5. There are how many days in 4 weeks?

6. There are 3 feet in 1 yard. 9 yd. = _____ ft.

7. George bought 3 bunches of carrots at 8¢ a bunch, for his rabbits. How much did all the carrots cost?

8. There are 5 rows of seats with 5 seats in each row in Miss Green's room. In all the rows there are how many seats?

Make a silent-helper for each fact on the chart below. Study together the facts in each box.

These facts are the last with products under 30.

Study Chart 5. Multiplication

5 × 4 = 20	4 × 5 = 20	6 × 4 = 24	4 × 6 = 24	8 × 3 = 24	3 × 8 = 24
7 × 4 = 28	4 × 7 = 28	9 × 3 = 27	3 × 9 = 27	7 × 3 = 21	3 × 7 = 21	5 × 5 = 25

At a Roadside Stand

1. Mrs. Snow bought 5 bunches of radishes at 5¢ a bunch. She paid how much for all?

2. Big roses are 9¢ each. Janet wants to buy 3 of them. How much money does she need to buy them?

3. Mr. Smith stopped to buy 3 of our 8-cent melons. I told him the 3 melons would cost _____¢.

4. New potatoes are 7¢ a pound. We put 4 lb. in each little basket. How much is each basket worth?

***5.** Bob Brown said, "I'll take a dozen of those apples." The price is 3 for 5¢. How much should Bob pay for a dozen?

Write the products on your paper:

	a	b	c	d	e	f	g	h
6.	5 × 4 =	6 × 4 =	5 × 3 =	4 × 4 =	3 × 4 =	8 × 3 =	4 × 7 =	9 × 3 =

A Candy Sale

1. Sally brought 39 pieces of fudge; Joan, 57 pieces; and Betty brought 44 pieces. How many pieces of fudge did all three bring?

2. If the girls put 7 pieces in each bag, how many bags will they need for the fudge?

3. Five boys each brought 20 paper bags. How many bags did all bring?

4. Carl buys 2 bags of fudge. How many pieces of fudge does he get?

***5.** The price of cream candy is 3 pieces for a nickel. How many pieces should George get for a quarter?

***6.** Carl buys 6 pieces of cream candy. How much does he pay for it?

Multiply, and go over your work to check:

	a	b	c	d	e	f	g	h
7.	4	7	4	3	4	6	0	8
	6	4	5	8	7	3	7	3
8.	7	9	5	3	5	3	6	5
	3	3	4	7	5	9	4	0
9.	32	75	54	90	32	32	53	73
	6	3	4	2	7	8	5	4
10.	58	60	96	32	43	40	80	41
	2	4	3	9	5	7	3	6

Carrying More Than One in Multiplication

Frances set 4 hens. She put 15 eggs under each hen. Every egg hatched out a little chick. How many chicks did Frances get?

15 To find the answer, multiply 15 by 4.
4 $4\times5=20$. Write 0 under the 4, and carry 2.
60 $4\times1=4$. $4+2=6$. Write 6 under the 1.
Frances got 60 little chicks.

In multiplication, sometimes you carry 1, sometimes 2, or you may have to carry a number larger than 2.

What must you carry in each example in row 1 to get the answers that are given?

	a	b	c	d	e	f
1.	15	218	317	749	67	23
	5	3	4	2	3	9
	75	654	1268	1498	201	207

Try to multiply without a mistake.

2.	520	33	24	215	314	415
	2	8	6	4	5	5
3.	617	23	416	32	723	916
	4	8	4	9	4	3
4.	68	34	24	43	87	49
	2	7	5	7	3	3
5.	32	33	314	214	819	716
	8	9	6	7	3	4

Practice in Carrying in Multiplication

Work these examples without using a pencil. Multiply, then add. For example:

1a. $4 \times 5 + 1$. First multiply 4×5; then, to the product, 20, add 1. The answer is 21.

	a	b	c	d
1.	$4 \times 5 + 1$	$6 \times 4 + 1$	$8 \times 3 + 1$	$4 \times 3 + 2$
2.	$3 \times 8 + 2$	$5 \times 5 + 1$	$7 \times 4 + 2$	$3 \times 6 + 2$
3.	$4 \times 7 + 1$	$3 \times 9 + 1$	$3 \times 7 + 1$	$2 \times 8 + 1$
4.	$9 \times 3 + 2$	$5 \times 4 + 2$	$4 \times 6 + 2$	$9 \times 2 + 2$
5.	$2 \times 5 + 1$	$7 \times 3 + 2$	$4 \times 7 + 2$	$4 \times 4 + 2$

Write the products on paper as quickly as you can.

	a	b	c	d	e	f
6.	59 × 3	32 × 8	53 × 5	84 × 3	32 × 9	34 × 7
7.	57 × 4	42 × 5	34 × 6	96 × 3	46 × 4	67 × 4
8.	23 × 9	87 × 3	96 × 2	57 × 2	33 × 8	76 × 4

Problems

9. When Ellen rode with her father last Saturday she saw that he drove 35 miles an hour. They drove from 9 o'clock in the morning to 12 o'clock, noon. Did they drive more or less than 100 miles?

***10.** Mr. Johnson puts 12 chickens in each crate. Yesterday he took 9 crates of chickens to town. Today he took 2 crates. How many chickens did he take to town both days?

Zeros in Multiplication

Each of 3 brothers paid $2.09 for his ticket to camp. How much did all three pay?

Long Way, Adding:	Short Way, Multiplying:
$2.09 2.09 2.09 $6.27	$2.09 × 3 = $6.27 $3 \times 9 = 27$. Write 7, and carry 2. $3 \times 0 = 0$. $0 + 2 = 2$. Write 2 under the 0. $3 \times 2 = 6$. Write 6, as shown.

Are these products right?

202 × 4 = 808	60 × 3 = 180	20 × 5 = 100	50 × 4 = 200	105 × 4 = 420	408 × 3 = 1224

Multiply. Check your work by going over it again.

	a	b	c	d	e	f
1.	105 × 3	102 × 6	204 × 4	306 × 2	408 × 2	207 × 2
2.	300 × 6	305 × 5	809 × 3	607 × 4	700 × 3	905 × 2
3.	103 × 9	406 × 4	505 × 4	203 × 7	608 × 3	304 × 7
4.	406 × 3	303 × 8	203 × 9	304 × 6	907 × 3	703 × 4

5. Roger said that the shortest road to White Fish Lake is 107 miles. How many miles is it to the lake and back?

Everyday Problems

1. Betty's mother bought a crate of berries. There were 3 layers of boxes, with 8 boxes in a layer. How many boxes were in the crate of berries?

2. Fred had $23.10 in the bank. He took out $4.50 to buy shoes. How much did he have left in the bank?

3. Dan spent $1.50 at the meat market, 28¢ at the bakery, and $1.42 at the grocery. How much did he spend?

4. Father spent 25¢ for telephone calls. Each call cost 5¢. How many times did Father call?

5. Joe and I went fishing. I caught 20 fish near a sunken tree. Joe didn't catch any where he was, so I gave him half of my fish. How many fish did each of us have then?

6. As they started their auto trip the speedometer on the car showed 685 miles. Nancy wrote this down. At the end of the trip the speedometer showed 1700 miles. How far had they driven on that trip?

***7.** At the bakery I bought 4 gingerbread boys at 5¢ each, a loaf of bread for 13¢, and a pie for 25¢. How much was my bill? I gave the bakery clerk a half dollar and a quarter. How much change should I have received?

***8.** "When 5 girls were visiting me, Mother gave us a plate of cookies. Each of us girls ate 2 cookies, and 5 were left on the plate. How many cookies did Mother give us?" Jane asked. What is your answer?

Some New Division Facts

1. Sally bought a bag of 27 English walnuts. How many children can she treat, if she gives each child 3 walnuts?

2. I want to plant 8 trees in a row. I have 24 trees to plant. Can you tell me how many rows I shall have?

3. There are 28 boys who plan to row across a lake. Four boys may go in each boat. How many boats are needed?

4. Daisy wishes to buy some 6-cent lemon tarts. She has only 24¢. How many tarts can she buy?

5. Twenty-one days are how many weeks?

6. Twenty-eight days are how many weeks?

7. How many 5-cent toy Indians can Ted buy with 20¢?

8. A street car ride costs Don 7¢. How many rides can he take with 28¢? with 21¢?

9. Billy gets 3¢ for each paper. All of his papers sold for 21¢. How many papers did he sell?

Thinking of multiplication may help you to remember these division facts. For the first fact, think: 4 in 20, 5 times. $5 \times 4 = 20$.

Study Chart 5. Division

$4\overline{)20}$ = 5	$5\overline{)20}$ = 4	$3\overline{)21}$ = 7	$7\overline{)21}$ = 3	$3\overline{)24}$ = 8	$8\overline{)24}$ = 3
$4\overline{)28}$ = 7	$7\overline{)28}$ = 4	$3\overline{)27}$ = 9	$9\overline{)27}$ = 3	$4\overline{)24}$ = 6	$6\overline{)24}$ = 4	$5\overline{)25}$ = 5

Nature Problems

1. Alice thinks that 75 violets will make a nice bouquet. She wants to pick 3 bouquets each of that size. How many violets should she pick?

2. This year Charles saw 73 different kinds of birds and Dick saw 57 kinds. Charles saw how many more kinds than Dick?

3. May kept a record of the kinds of wild flowers she saw and where she saw them. She saw 3 kinds on the hillside, 7 in the marsh, 13 in the woods, and 3 by the roadside. Altogether she saw how many different kinds of flowers?

4. When Milo was at the lake, he looked for things that live in, or near, the water. He found 4 tiny mud turtles, 8 minnows, 3 little frogs, and 6 clams. When he took them home he found that he had brought how many of these things?

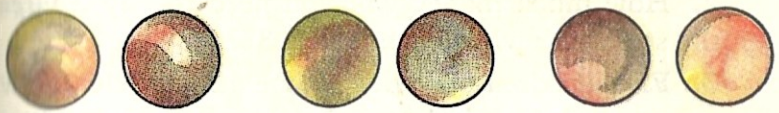
5. Mary saw 15 kinds of moths and 19 kinds of butterflies during the summer. How many kinds of moths and butterflies did she see?

6. How many fewer kinds of moths than butterflies did Mary see?

One-Third of a Number

Mother gave us 3 boys 6 pretty glass marbles. She said, "Each of you may take one-third of them." How many should I take?

I remember that when anything is divided into 3 equal parts, each part is called one-third, $\frac{1}{3}$.



$\frac{1}{3}$ of 6 $\frac{1}{3}$ of 6 $\frac{1}{3}$ of 6

Rose, Anna, and Doris made 24 pieces of candy. Each girl was to have a third, or $\frac{1}{3}$, of the 24 pieces of candy. How many pieces should each have?

You know that to find $\frac{1}{2}$ of a number you divide the number by 2.

By what number will you divide to find $\frac{1}{3}$ of 24?

$\frac{1}{3}$ of 24 = ?

Find the answers to the following, and check:

	a	b	c	d
1.	$\frac{1}{3}$ of 6 =	$\frac{1}{3}$ of 15 =	24 ÷ 3 =	$3\overline{)9}$
2.	$\frac{1}{3}$ of 12 =	$\frac{1}{3}$ of 27 =	18 ÷ 3 =	$3\overline{)21}$

3. Mrs. White asked Paul, Harry, and Dan to rake up the leaves in her yard. Then she gave Paul 15 nickels and asked him to give each of the other boys a third of the nickels. How many nickels should each boy get?

To find $\frac{1}{3}$ of a number, divide the number by 3.

Problems

Work as many of these problems as you can without using a pencil. Then work the others.

1. When William had been at the boys' summer camp 28 days, he wrote to his cousin, "I have been here in camp _____ weeks today."

2. How much money will you need to pay 3 fares on the street car when each fare is 8¢?

3. Five children may ride in one automobile. How many automobiles will be needed to take 20 children to see the parade?

4. Sara has $23 and Herbert has $17 in the bank. How much more money has Sara in the bank than Herbert?

5. One Saturday morning Amy hiked 24 blocks. She told her father, "We walked 4 times as many blocks as I walk going to school." How many blocks from school did she live?

6. A quarter is equal to how many nickels?

7. At 3¢ each, how many pears can Jack buy for 27¢?

8. Mr. Jones can run his car 15 miles on a gallon of gasoline. When he had just 5 gallons in his tank, how many miles farther could he go before he would run out of gasoline?

9. Bob, Bert, Tony, and Tom deliver 28 papers for Carl. Carl said, "Each boy delivers the same number of papers." How many should Bob take?

10. James, Albert, and Joe divided equally among themselves the 21 quarts of nuts that they gathered. How many quarts did each boy get?

Checking Up on Multiplication by Three

You have studied all the multiplication facts with 3. Give the products for the examples below:

0	1	2	3	4	5	6	7	8	9
3	3	3	3	3	3	3	3	3	3

Study carefully any fact above that you do not know. You will need to use it often.

Work the test examples in each row below. Cover your work and multiply again to check.

If you make a mistake, correct your mistake, and then work the practice examples in that row.

	Test		Practice		
	a	b	c	d	e
1.	102 × 3	301 × 3	203 × 3	103 × 3	302 × 3
2.	40 × 3	70 × 3	60 × 3	90 × 3	80 × 3
3.	502 × 3	603 × 3	401 × 3	903 × 3	802 × 3
4.	24 × 3	16 × 3	25 × 3	26 × 3	17 × 3
5.	46 × 3	69 × 3	84 × 3	67 × 3	94 × 3
6.	206 × 3	304 × 3	108 × 3	307 × 3	205 × 3
7.	409 × 3	607 × 3	506 × 3	708 × 3	904 × 3

Checking Up on Division by Three

You have studied all the division facts with 3. Give the quotients for the examples below.

$3\overline{)0}$ $3\overline{)3}$ $3\overline{)6}$ $3\overline{)9}$ $3\overline{)12}$ $3\overline{)15}$ $3\overline{)18}$ $3\overline{)21}$ $3\overline{)24}$ $3\overline{)27}$

Study carefully any fact above that you do not know. You will need to use it often.

Work the test examples in each row below. Multiply the quotient by the divisor to check your division.

If you make a mistake in any row, correct your mistake, and then work the practice examples of the same kind in that row.

	Test		Practice		
	a	**b**	**c**	**d**	**e**
1.	$3\overline{)36}$	$3\overline{)69}$	$3\overline{)33}$	$3\overline{)93}$	$3\overline{)63}$
2.	$3\overline{)369}$	$3\overline{)639}$	$3\overline{)966}$	$3\overline{)699}$	$3\overline{)336}$
3.	$3\overline{)303}$	$3\overline{)609}$	$3\overline{)903}$	$3\overline{)306}$	$3\overline{)906}$
4.	$3\overline{)690}$	$3\overline{)930}$	$3\overline{)360}$	$3\overline{)630}$	$3\overline{)990}$
5.	$3\overline{)156}$	$3\overline{)189}$	$3\overline{)213}$	$3\overline{)246}$	$3\overline{)129}$
6.	$3\overline{)270}$	$3\overline{)180}$	$3\overline{)150}$	$3\overline{)210}$	$3\overline{)240}$
7.	$\frac{1}{3}$ of 12	$\frac{1}{3}$ of 9	$\frac{1}{3}$ of 15	$\frac{1}{3}$ of 27	$\frac{1}{3}$ of 18

More About Telling Time

1. When the minute hand, or long hand, of a clock is at 6 and the hour hand, or short hand, is between 10 and 11, the time shown is 30 minutes past ten, or _____ _____ ten.

2. When the minute hand of a clock is at 3 and the hour hand is between 4 and 5, we say the time is 15 minutes past 4, or a quarter past 4.

3. When the minute hand of a clock is at 9 and the hour hand is between 10 and 11, we say the time is 15 minutes to 11, or a quarter to 11.

4. On your paper draw a clock face to show 15 minutes to 3.

5. Draw another clock face on your paper to show 15 minutes past 9.

6. What is the time of day if the minute hand is at 3 and the hour hand is between 1 and 2?

7. Where are the hands of the clock at 15 minutes past five?

8. What time is it when the minute hand is at 9 and the hour hand is between 3 and 4?

9. The clock is like this when the arithmetic class begins. What time does the class in arithmetic begin?

10. This is the way the clock looks when the arithmetic class ends. What time is it when the arithmetic class ends?

*11. How long is the arithmetic period?

Test and Practice: Addition and Subtraction

First work the test examples in each row and check your answers. If you make a mistake you need more practice. Correct the mistake; then work the practice examples in that row.

Addition

	Test			Practice			
	a	b	c	d	e	f	g
1.	2 3 4	3 6 9	4 2 9	3 3 8	2 2 9	6 2 6	5 2 4
2.	76 86	18 88	76 98	55 98	84 97	67 37	67 58
3.	512 411 653	643 223 632	$8.31 .31 5.23	326 211 960	514 210 571	836 121 430	$2.82 .23 9.32

Subtraction

4.	184 88	153 69	156 57	123 85	131 37	148 79	171 83
5.	545 286	923 548	165 97	845 269	833 496	812 348	781 452
6.	$9.84 5.99	$8.28 2.83	$6.22 .33	$6.36 3.58	$8.22 2.95	$6.11 2.89	$3.52 .76

Checking on What You Have Learned

1. What month is this?
2. How many days are there in this month?
3. Name a month that has 30 days.
4. Can you name 3 other months that have 30 days?
5. Name a month that has 31 days.
6. What other months have 31 days?
7. What month has fewer than 30 days?
8. Name the days of the week.
9. What date is today? Today is which day of the week?
10. Write the date of your birthday.
11. Write the names of the summer months.
12. What year is this? Read this number in two ways.
13. Which is longer, a foot or 15 inches?
14. Which is most, 3 dimes, a quarter, or 4 nickels?
15. What numbers were left out below?
    45, 50, __, __, 65, 70, __, __, 85
16. Write the numbers by ten's to 100.
17. Which is less, a quart or a pint?
18. Name two kinds of things sold by the pound.
19. How many pint bottles will one quart of milk fill?
20. How many doughnuts should you get if you buy 3 dozen doughnuts?
21. Look at the clock in your room, and write the time it shows.
22. What time is it when the minute hand is at 3 and the hour hand is between 9 and 10?

*Making a Wooden Zoo

Seven third-grade boys plan to make some wooden animals for the children in a day nursery.

1. They want to make 6 elephants, 4 lions, 7 horses, 5 tigers, and 6 camels, or ____ animals in all.

2. Each of the 7 boys will make the same number of animals. How many animals will each boy make?

3. By measuring, the boys find they can make 4 animals from each piece of white wood. How many pieces of wood will they need to make all the animals?

4. At $.30 for each piece of white pine board, all the pieces will cost how much?

5. How much will 4 saws cost at $.45 each?

6. How much will 6 cans of paint cost at $.24 a can?

7. How much will 3 small brushes cost at 32¢ each, and 2 larger brushes at 58¢ each?

8. How much will the cost of the wood, saws, paint, and brushes be altogether?

Polly Prim Doll Laundry

1. At the right is Joan's laundry price list. It shows her name, and how many of each thing she sent to the doll laundry. It also shows how much she pays to have one of each thing washed and ironed.

Laundry Price List

Name *Joan*

3	dresses	each 9¢	.....
2	sweaters	each 8¢	.....
...	skirts	each 4¢	.....
...	aprons	each 3¢	.....
2	sheets	each 5¢	.....
...	shirts	each 7¢	.....
...	overalls	each 6¢	.....
...	coats	each 10¢	.....
Total			.....

2. How much does she pay for 3 dresses? for 2 sweaters? for 2 sheets?

3. Find how much Joan must pay for all her laundry work.

4. Copy the lists below and find each total.

Jane	Fred	Hans	Maude
2 dresses at 9¢	2 sweaters	3 sweaters	3 dresses
4 aprons at 3¢	4 shirts	5 sheets	6 skirts
4 sheets at 5¢	3 overalls	4 overalls	8 aprons
7 skirts at 4¢	2 coats	3 shirts	4 shirts

When Something Is Left Over

Ed and Ray climbed a tree to get a kitten for Mrs. Black and she gave them a nickel. How many cents should each boy get?

The boys changed the nickel for pennies and put them down like this:

"I see," Ed said, "5 ÷ 2 = 2 and 1 left over. You take 2¢; I'll take 2¢; and we'll buy a cent's worth of candy that we can divide between us."

The number left over is called the *remainder*.

A short way to write the boys' division is:

$2\overline{)5}$ $\quad$ 2 r1

Check: $2 \times 2 = 4$. $\quad 4 + 1 = 5$.

r stands for remainder.

1. Walter, Larry, and Tom bought a bag of 16 cherries. What was each boy's share? Was there a remainder? What was it?

2. Neil has 8¢. He can buy:

a. One 5¢ ball and have ___ ¢ left over.

b. ___ 3¢ tops and have ___ ¢ left over.

c. ___ 4¢ toys and have ___ ¢ left over.

d. ___ 6¢ kite and have ___ ¢ left over.

Copy, and write the answers the short way:

3.	$2\overline{)3}$	$2\overline{)5}$	$2\overline{)4}$	$2\overline{)7}$	$2\overline{)2}$	$2\overline{)8}$	$2\overline{)6}$
4.	$3\overline{)3}$	$3\overline{)5}$	$3\overline{)6}$	$3\overline{)4}$	$3\overline{)7}$	$3\overline{)9}$	$3\overline{)8}$
5.	$4\overline{)11}$	$4\overline{)8}$	$4\overline{)5}$	$4\overline{)7}$	$4\overline{)4}$	$4\overline{)12}$	$4\overline{)6}$

The remainder is always smaller than the divisor.

How Well Do You Remember?

Ask somebody to test you with your addition silent-helpers. Study again any addition facts that you do not know.

Ask somebody to test you with your silent-helpers for subtraction. Study again any subtraction facts that you do not know.

Division is easier for pupils who know the subtraction facts.

Flash-Card Test

Write only the sums or differences as your teacher flashes the cards and says either, "Add," or "Subtract." Pupils who give wrong answer or who are too slow to keep up should practice again and again with their silent-helpers.

Some Subtractions Used in Division

See how quickly you can give these differences:

	a	b	c
1.	6 from 7 =	10 from 11 =	2 from 3 =
2.	14 from 15 =	8 from 9 =	16 from 17 =
3.	12 from 13 =	9 from 10 =	5 from 9 =
4.	4 from 7 =	20 from 23 =	9 from 17 =
5.	18 from 21 =	18 from 24 =	27 from 29 =
6.	15 from 18 =	10 from 14 =	25 from 28 =
7.	9 from 13 =	9 from 16 =	18 from 26 =
8.	18 from 22 =	7 from 12 =	9 from 15 =
9.	9 from 12 =	18 from 19 =	18 from 25 =
10.	21 from 25 =	8 from 17 =	24 from 27 =
11.	16 from 23 =	14 from 20 =	12 from 17 =

Subtraction Families

Lucy had 39¢ in her bank. She took out 35¢ to buy a birthday gift. How much was left in her bank?

You know that 5 from 9 is 4, so 35 from 39 is also 4.

Read down under each letter in rows 1, 2, 3. Where no answer is given, you give it.

	a	b	c
1.	4 from 8 = 4	6 from 9 =	8 from 11 =
2.	14 from 18 = 4	16 from 19 =	18 from 21 =
3.	24 from 28 = 4	36 from 39 =	28 from 31 =

Write only the differences on your paper:

4.	14 from 15 =	21 from 23 =	18 from 24 =
5.	16 from 17 =	16 from 21 =	24 from 30 =
6.	14 from 20 =	18 from 22 =	16 from 20 =
7.	24 from 29 =	27 from 30 =	18 from 21 =
8.	24 from 31 =	12 from 16 =	12 from 15 =
9.	16 from 22 =	18 from 23 =	20 from 23 =
10.	18 from 26 =	24 from 28 =	27 from 33 =
11.	12 from 17 =	14 from 17 =	16 from 23 =
12.	18 from 20 =	18 from 25 =	21 from 25 =
13.	28 from 30 =	25 from 28 =	15 from 18 =
14.	21 from 27 =	16 from 18 =	27 from 32 =
15.	20 from 24 =	10 from 13 =	28 from 34 =
16.	27 from 35 =	15 from 17 =	16 from 19 =
17.	25 from 29 =	28 from 33 =	27 from 34 =
18.	8 from 17 =	27 from 27 =	20 from 20 =

Using Subtraction to Find the Remainder

Nine girls have 24 cookies to share equally. How many whole cookies should each get and how many whole cookies should be left over?

```
  2
9)24
  2
9)24
 18
  6
```

Divide: Grace thought, "9 is contained in 24 2 times and some left over." Write the 2 just above the right hand figure used, which is the 4.

Multiply: 2×9=18. Write 18 just below the 24. Then to find the difference,

Subtract: 18 from 24=6.

Compare: 6 is less than the divisor 9; so the quotient 2 is correct and 6 is left over, or the **remainder.**

Each should get 2 cookies, and 6 cookies should be left over.

Subtraction families help in finding remainders.

Copy these examples, and divide:

	a	b	c	d	e	f
1.	2)9	5)17	2)11	5)19	6)15	7)19
2.	3)23	7)27	9)23	8)29	5)24	6)29
3.	8)22	9)28	7)20	9)30	6)20	8)26
4.	9)24	7)30	8)31	6)17	8)28	9)19
5.	8)21	9)22	8)20	9)21	6)23	9)20
6.	9)26	8)19	7)24	6)27	7)33	5)23

Division with Remainders

1. Today Helen opened her bank and found she had saved 24 nickels. She put them in piles of 5. How many piles of 5 nickels had she, and how many nickels were left over?

2. ____ nickels equal a quarter. 24 nickels equal ____ quarters with ____ nickels left over.

24 (dividend) ÷ 5 (divisor) = ____ r ____.

divisor $5\overline{)24}$ dividend

Divide each number below by the divisor shown. Give the quotient and the remainder, if any.

Read the answers across: 3 r1; 5 r1; etc.

Divisor: 2				
7	11	3	8	5
4	2	14	15	10
9	6	17	12	19
13	18	16		

Divisors: 9; 8; 7				
10	17	12	14	11
13	16	18	15	19
20	25	29	21	26
28	22	27	24	23

Divisors: 5; 6				
9	7	13	16	21
20	6	10	8	15
11	14	18	22	7
25	17	23	27	12
29	26	28	24	19

Divisors: 4; 3				
16	20	8	7	13
23	5	11	19	25
6	17	15	10	14
18	12	29	24	28
27	21	26	22	9

Finding Remainders

In the examples below, the remainders are not given. You must find them. In the first example

think: $2\overline{)5}$ $\quad 2 \times 2 = 4$; 4 from 5 = 1. $\quad$ 2 r1

	a	b	c	d	e
1.	$2\overline{)5}$ r__	$2\overline{)11}$ r__	$2\overline{)3}$ r__	$2\overline{)9}$ r__	$2\overline{)7}$ r__
2.	$2\overline{)13}$ r__	$2\overline{)15}$ r__	$2\overline{)17}$ r__	$2\overline{)19}$ r__	$4\overline{)13}$ r__
3.	$3\overline{)10}$ r__	$3\overline{)16}$ r__	$4\overline{)19}$ r__	$3\overline{)17}$ r__	$4\overline{)11}$ r__
4.	$5\overline{)12}$ r__	$3\overline{)20}$ r__	$3\overline{)11}$ r__	$5\overline{)14}$ r__	$3\overline{)19}$ r__
5.	$7\overline{)20}$ r__	$8\overline{)15}$ r__	$6\overline{)23}$ r__	$9\overline{)17}$ r__	$4\overline{)21}$ r__
6.	$5\overline{)17}$ r__	$6\overline{)22}$ r__	$8\overline{)23}$ r__	$9\overline{)26}$ r__	$7\overline{)32}$ r__
7.	$8\overline{)27}$ r__	$7\overline{)26}$ r__	$6\overline{)16}$ r__	$5\overline{)29}$ r__	$9\overline{)29}$ r__

Check each answer on your paper in this way. For example: 7a above, $8 \times 3 = 24$. $24 + 3 = 27$.

To check division with a remainder, multiply the quotient by the divisor, then add the remainder to this product. The number that you get should equal the dividend.

Larger Quotients and Remainders

Janet has cut out and saved 149 paper dolls. She wants to share them as equally as she can with 6 friends. How many dolls should each get?

```
  2
7)149
 14
```
Divide: 7 in 14, two times. Write the quotient 2 just above the 4.

Multiply: $2 \times 7 = 14$. Write 14 under 14.

```
  2
7)149
 14
```
Subtract: 14 from 14 is 0. You need not write the 0.

```
  2
7)149
 14
  9
```
Bring Down: The 9 in the dividend has not been divided, so bring down 9.

```
  21
7)149
 14
  9
```
Divide: 7 in 9, once. Write the quotient 1 just above the 9.

Multiply: $1 \times 7 = 7$. Write 7 under the 9.

```
  21
7)149
 14
  9
  7
  2
```
Subtract: 7 from 9 is 2.

Compare: The 2 that is left over is smaller than 7, so you cannot divide 2 by 7. Then 2 is the **remainder**.

Check:
$7 \times 21 = 147$
$147 + 2 = 149$

Each should get 21 dolls, and 2 dolls should be left over, or remain undivided.

Are these examples correct?

51 r1 $4\overline{)205}$ 84 r1 $2\overline{)169}$ 111 r2 $7\overline{)779}$ 101 r3 $6\overline{)609}$

Write the quotients and remainders and check:

	a	b	c	d	e
1.	$8\overline{)169}$	$5\overline{)258}$	$6\overline{)188}$	$4\overline{)207}$	$7\overline{)218}$
2.	$5\overline{)157}$	$7\overline{)289}$	$8\overline{)249}$	$6\overline{)129}$	$4\overline{)287}$
3.	$7\overline{)148}$	$6\overline{)247}$	$4\overline{)169}$	$5\overline{)206}$	$8\overline{)889}$

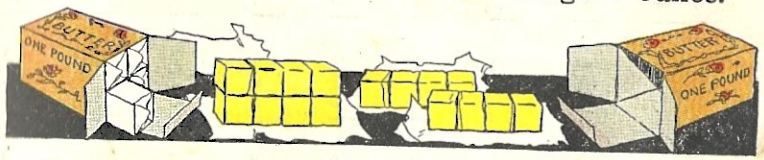
Pounds and Ounces

1. Name some things that we buy by the pound at the grocery store; at the meat market; at the hardware store.

2. How can you find how heavy you are, or how much you weigh?

3. How many pound bricks of butter would it take to weigh as much as you weigh?

4. If a pound of butter were cut into 16 pieces of the same weight, each piece would weigh 1 ounce.



5. How many ounces in $\frac{1}{2}$ pound? in $\frac{1}{4}$ pound? in 2 pounds? in 4 lb.? in 3 lb.?

6. Bring to school a list of some things that your mother buys by the ounce, by the pound.

7. William asked the butcher for a pound and a half of beef steak. The butcher put some steak on the scales and said, "That piece weighs a pound and 9 ounces." Was that more or less than William asked for?

8. Robert bought 4 lb. of mixed candy to sell at a picnic. How many ounces did he get?

9. Robert wants to put the candy in paper bags. He thinks 3 oz. of candy in each bag will be enough. How many bags does he need?

16 ounces (oz.) = 1 pound (lb.)

Work Without Pencils

2 5 3 0 1 4 9 7 8 6

1. Multiply each number above by 2, and add 1:
2. Multiply each number above by 3, and add 2:
3. Multiply each number above by 3, and add 1:

Multiply the numbers below and add 2:

	a	b	c	d	e	f	g	h	i
4.	4	7	1	6	2	3	0	2	5
	4	4	5	4	5	4	4	4	4
5.	3	5	0	4	3	1	2	4	2
	5	5	6	5	6	7	6	6	7
6.	2	3	1	3	0	4	3	1	2
	8	7	8	9	9	7	8	9	9

Problems Without Numbers

7. I know how much an ice-cream cone costs and how many I want to buy. How can I find how much I must pay for them?

8. I know how many marbles I had when I left home, and how many I have now. How can I find how many more or fewer I have?

9. I know how many crab apples are in a certain bag and how many boys are to share them equally. How can I find the number each boy should get?

10. I know how many girls were at the party, how many pieces of candy were given to each girl, and how many pieces of candy were left. How can I find how many pieces of candy there were at first?

Testing What You Have Learned

Add and check:

	a	b	c	d	e
1.			979	518	149
	55	745	987	705	65
	699	978	89	88	27
	789	705	3	639	766

Subtract and check:

2.	965	943	704	800	$8
	386	848	68	754	3.87

Multiply and check:

3.	103	30	34	43	229
	9	8	6	7	3

Divide and check:

4.	$4\overline{)804}$	$6\overline{)186}$	$8\overline{)240}$	$7\overline{)287}$	$9\overline{)180}$
5.	$3\overline{)29}$	$5\overline{)28}$	$6\overline{)27}$	$4\overline{)19}$	$7\overline{)24}$
6.	$8\overline{)889}$	$7\overline{)708}$	$5\overline{)209}$	$3\overline{)127}$	$4\overline{)846}$

7. Grandfather wants his herd of 287 cows divided as equally as possible among his 4 sons. How many cows will each get and how many will be left over?

8. Mr. Jenkins wants to buy three prize cows at $315 each. How much would he have to pay for them?

9. Divide $885 by 4 and you get what answer?

Decorating the Christmas Tree

The third-grade children in the Longfellow School bought decorations for their Christmas tree.

Can you work their problems? If you need help with the problems, use the chart below.

1. How much did they pay for 6 colored balls?
2. Nine candy canes cost how much?
3. The cost of five silver shapes was how much?
4. They paid how much for 6 stars?
5. Four boxes of candy cost how much?
6. Four cones cost how much?

Make a silent-helper for each fact on the chart below. They give products between 30 and 40.

Say the facts to yourself, again and again.

Study Chart 6. Multiplication

8	4	5	7	6	5	6	9	4
4	8	7	5	6	6	5	4	9
32	32	35	35	36	30	30	36	36

Keeping in Practice

Copy these examples, and write the products.

	a	b	c	d	e	f	g	h
1.	8	7	9	6	4	5	4	5
	4	5	4	6	8	6	9	7
2.	7	9	6	5	7	9	3	0
	3	2	5	5	4	3	6	7
3.	3	4	8	4	4	3	3	4
	9	7	3	4	6	7	8	5

Write only the answers:

	a	b	c	d
4.	$4\times8+3$	$5\times6+3$	$7\times3+3$	$8\times3+2$
5.	$6\times6+3$	$9\times4+3$	$5\times5+3$	$6\times5+3$
6.	$7\times5+2$	$8\times4+5$	$5\times7+2$	$4\times9+3$

Multiply:

	a	b	c	d	e	f	g
7.	68	46	35	67	34	25	98
	4	6	6	5	9	7	2
8.	56	34	39	$1.13	$3.15	$.45	87
	5	8	4	7	6	7	3
9.	43	42	98	59	37	82	77
	7	9	3	4	5	4	4
10.	65	34	40	62	43	40	89
	4	6	9	5	9	8	3
11.	47	32	89	66	44	45	98
	5	9	4	6	8	7	4

Checking Up on Multiplication Facts

	a	b	c	d	e	f	g	h	i	j
1.	9×0	6×6	5×1	4×2	2×6	1×1	0×9	2×8	0×5	1×0
2.	7×0	9×1	6×5	5×2	4×3	2×1	1×3	0×4	1×6	1×9
3.	7×1	6×0	9×2	6×4	5×3	4×4	2×0	1×7	0×6	0×2
4.	3×6	7×2	5×0	9×3	6×3	5×4	4×5	2×2	2×7	1×4
5.	3×8	3×7	7×3	4×0	9×4	6×2	5×5	4×6	3×4	3×5
6.	2×3	2×4	2×5	7×4	3×3	5×7	6×1	5×6	4×7	4×8
7.	1×5	1×2	3×2	3×9	7×5	4×1				
8.	0×8	3×1	0×3	0×7	2×9					
9.	8×1	8×0	8×2	8×3	8×4					
10.	3×0	0×0	1×8	0×1	4×9					

Above are the 81 multiplication facts that you have studied. Copy those you find hard to remember.

The empty boxes show how many more you have to learn. How many multiplication facts must you know altogether?

A Good Number Game

36	24	32	18	27	30	12	1
15	35	21	28	0	9	16	20

Write each number above, and under it write all the multiplication facts in the boxes above that give that number.

Examples: 36: 6×6, 9×4, 4×9 — 24: 3×8, 8×3, 4×6, 6×4

Dividends Between 30 and 40

If you need help, look at the chart below.

1. Every birthday Frank has received from his grandfather and saved, a five-dollar gold piece. Now his gold pieces amount to $35. How old is Frank?

2. Thirty-six children are to march in 4's in the parade. How many 4's will there be?

3. Mr. Glen received $32 that he did not expect to get. He decided to buy a present for each of his 8 nieces and nephews with that money. How much could he spend for each present if each cost the same?

4. Thirty-five days equal how many weeks?

5. Thirty-five cents is equal to how many nickels?

6. Uncle Ed gave Jim a box of 36 pieces of candy and told him to share the candy equally with his five cousins. Each one had how many pieces of candy?

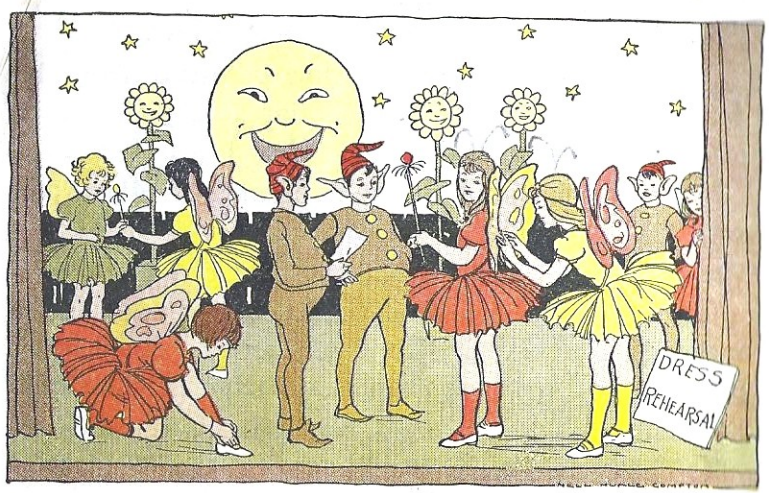
When you have learned the division facts, you can use them, as you have seen, to work longer examples in division.

Study the facts on this chart. Make a silent-helper for each fact.

Study Chart 6. Division

$5\overline{)35}$	$7\overline{)35}$	$4\overline{)36}$	$9\overline{)36}$	
$5\overline{)30}$	$6\overline{)30}$	$6\overline{)36}$	$4\overline{)32}$	$8\overline{)32}$

Costumes for a Play



Some third- and fourth-grade children are to be in a play called "The Elves and the Fairies."

1. Each fairy's dress will take 4 yards of thin cloth at $.28 a yard. The cloth for each dress will cost how much?

2. There will be six fairy dresses in all. The cloth for all the dresses will cost how much?

3. A third of the fairies will wear yellow dresses, a third pink dresses, and the others green dresses. How many will wear yellow? How many pink? How many green?

4. Each elf suit will take 3 yards of cloth at 39¢ a yard. The cloth for a suit will cost how much?

5. The cloth for 4 elf suits will cost how much?

6. The cloth for the fairy dresses and for the elf suits together will cost how much?

Problems and Practice

1. Ellen Smith says that she was born in 1929. How old is she now? (Write the present year. Write 1929 under it. Subtract.)

2. Will's birthday is 4 weeks from today. How many days until his birthday?

3. I had 15 colored crayons. I gave 3 to my cousin, 5 to my brother, and I lost 3. How many did I have left?

4. Tony, Allen, and Ray each will give $\frac{1}{3}$ of the money to buy a 90¢ book. How much is Ray's share?

5. Brother and I want to buy a $2 box of candy for Mother's birthday. Brother will pay $1.40. How much shall I pay?

6. I have lost 2 library books. The library clerk told me to bring 50¢ for one book and 65¢ for the other. How much money do I need for the books?

7. Mr. Pratt offered Davis $.50 an afternoon to help at the fruit store. Davis worked 4 afternoons last week and Mr. Pratt paid him $2.00. Was he paid the right amount of money?

8. Aunt Kate had 36 cookies left when we 9 children were leaving for home. She divided the cookies equally among us. My share was how many cookies?

Copy these examples. Divide and check.

	a	b	c	d	e
9.	$5\overline{)35}$	$5\overline{)355}$	$4\overline{)32}$	$4\overline{)328}$	$4\overline{)320}$
10.	$9\overline{)36}$	$9\overline{)369}$	$9\overline{)360}$	$6\overline{)30}$	$6\overline{)306}$
11.	$7\overline{)35}$	$7\overline{)357}$	$7\overline{)350}$	$6\overline{)36}$	$6\overline{)366}$

How to Divide Dollars and Cents

Clara and her older sister are going to take a trip by train. Clara's sister must pay $12.40 for a full fare ticket. Because Clara is younger than 12 years, she may ride for half fare. How much will Clara's ticket cost?

$2\overline{)\$12.40}$

$\$6.20$

$2\overline{)\$12.40}$

First put a cents' point for the quotient just above the cents' point in the dividend. Then divide as with other numbers. Write $ before the 6.

Clara's ticket will cost $6.20.

Check: $2 \times \$6.20 = \$12.40$.

Make these divisions, and check:

	a	b	c	d
1.	$4\overline{)\$32.40}$	$3\overline{)\$18.69}$	$7\overline{)\$35.70}$	$5\overline{)\$35.00}$
2.	$9\overline{)\$36.00}$	$8\overline{)\$16.88}$	$6\overline{)\$36.60}$	$2\overline{)\$14.24}$
3.	$7\overline{)\$21.07}$	$9\overline{)\$27.09}$	$8\overline{)\$32.08}$	$6\overline{)\$30.06}$
4.	$8\overline{)\$24.00}$	$6\overline{)\$24.66}$	$7\overline{)\$28.00}$	$9\overline{)\$18.99}$

5. Bob and his brother Don want to buy a puppy for $6.00. They plan to share the cost equally. Bob's share will be how much?

6. Six boys will share equally in paying for an $18.00 tent. How much should each boy pay?

***7.** Laura and Jean are going to buy a $4.75 doll and a $1.65 doll buggy. They will divide the cost equally. How much does Jean need for her share?

A Page of Practice

Copy, subtract, and check:

	a	b	c	d	e	f
1.	865 − 386	543 − 498	374 − 78	965 − 457	568 − 198	704 − 35
2.	602 − 520	200 − 54	690 − 58	510 − 164	760 − 668	471 − 368

Copy, add, and check:

3.	9 + 5 + 10 + 7	7 + 9 + 8 + 9	338 + 87 + 68 + 75	19 + 498 + 875 + 8	$1.04 + 5.66 + .98 + 5.67	$4.57 + 7.55 + .66 + 7.24

Copy, multiply, and check:

4.	34 × 9	41 × 8	510 × 7	506 × 6	617 × 5	709 × 4

Copy, divide, and check:

5.	$3\overline{)369}$	$4\overline{)208}$	$7\overline{)350}$	$9\overline{)279}$	$8\overline{)800}$	$6\overline{)306}$
6.	$9\overline{)34}$	$7\overline{)32}$	$6\overline{)40}$	$8\overline{)38}$	$5\overline{)200}$	$4\overline{)39}$

What mistakes do you find in example 7?

7.	$7.30 − 4.95 = $3.35	750 + 44 = 804	304 × 9 = 2736	700 − 209 = 491	113 × 7 = 991	$8\overline{)320}$

8. Divide each number in row B by each number in row A. Give the quotients, and the remainders.

A:	7		4		6		9	5	8
B:	)31	)30	)32	)33	)35	)38	)37	)39	)36

Measuring Liquids

One day at the filling station, Father said, "I'll take 10 gallons of gasoline and 6 quarts of oil."

1. The gasoline cost 16¢ a gallon or how much?

2. The man put a 1-gal. measureful and two 1-qt. bottles of oil into the engine. Was that 6 qt.?

3. How many quart bottles can a milkman fill with 1 gallon of milk? with 3 gal.? with $\frac{1}{2}$ gal.?

4. "I can let you have only 5 gal. today," Grandfather said. "Well, that will fill ____ qt. bottles," the milkman answered.

5. "I have orders, which I can't fill today, for 24 qt. bottles of milk. Can you sell me the milk?"

"Let me see," Uncle said, "24 quarts? Yes, I can spare _____ gallons."

6. Mr. Davis asked for a gallon and a half of oil at the gas station. The man said, "I'll give it to you from these quart bottles." How many quart bottles should he empty into the engine?

7. The oil cost $1.20 a gal. How much was the oil that Mr. Davis bought?

1 cupful (c.)	**= ½ pint (pt.)**
2 cupfuls (ea. ½ pt.)	**= 1 pint (pt.)**
2 pints (pt.)	**= 1 quart (qt.)**
4 quarts (qt.)	**= 1 gallon (gal.)**

Buying Milk at School

Many children at the Washington School drink a $\frac{1}{2}$-pint bottle of milk each morning. Try to work these problems about milk.

1. Glen took the orders for milk in his room today. First row, 4 bottles; second row, 6 bottles; third row, 3 bottles; fourth row, 5 bottles; and sixth row, 5 bottles. How many bottles must be ordered for Glen's room?

2. Four $\frac{1}{2}$-pt. bottles equal 1 qt. How many quarts of milk will be needed to fill the order?

3. There are 20 bottles of milk in one case. Glen's room will take how many cases, and how many extra bottles?

4. Milk costs 4 cents a bottle. How much money is needed to pay for the milk order?

5. How many bottles of milk can Edna buy for 8¢?

Think: 1 bottle costs 4¢. With 8¢ Edna can buy as many bottles as there are 4's in 8.

$$4¢\overline{)8¢}^{\,2} \qquad \text{Check: } 2 \times 4¢ = 8¢$$

Edna can buy 2 bottles of milk for 8¢.

6. How many bottles can Edna buy for 16¢? for 24¢? for 32¢? for 12¢? for 36¢? for 28¢? for 20¢?

7. The milkman left 9 cases of milk at our school. There are 20 bottles in each case. How many bottles did he leave?

8. At 5¢ a bottle, how many bottles can Dan buy for 10¢? for 20¢? for 30¢? for 15¢? for 25¢?

Dry Measure

"How much are the green beans?" Mrs. Brown asked the clerk.

"Fifteen cents a quart," the clerk said.

"Mother!" Sally said, "beans aren't liquid."

"You are right, Sally," said her mother, "but, we have pints and quarts also in dry measure. We sometimes measure cranberries, beans, peas, potatoes, berries, and many other things by dry measure."

1. What measures have the same names in both liquid and dry measures? (Pints and quarts in dry measure are a little larger than in liquid measure.)

2. What measure is used in liquid measure but not in dry measure?

3. What measures are used in dry measure but not in liquid measure?

4. Paul has only a quart measure but he wants to give Kate a peck of corn for her chickens. How many quart measurefuls must he give? How many quart measurefuls in a half peck?

5. Jack feeds his pony a quart of oats a day. How long should a bushel of oats last Jack's pony?

6. How many pint boxes can Bob and Jim fill with their bushel of blueberries?

7. Be ready to write the table of dry measure.

2 pints (pt.)	**=1 quart (qt.)**
8 quarts (qt.)	**=1 peck (pk.)**
4 pecks (pk.)	**=1 bushel (bu.)**
32 quarts	**=1 bushel**

Using Unseen Numbers

A: 7 0 2 4 8 1 9 3 5 6

Multiply each number in row A above by 4, and add 3 to the product. Multiply each by 4, and add 2. Multiply each by 4, and add 1.

B: 0 6 1 5 3 2 4 7

Multiply each number in row B above by 5, and add 4. Multiply each by 5, and add 2. Multiply each by 5, and add 3. Multiply each by 5, and add 1.

C: 5 1 0 4 6 3 2

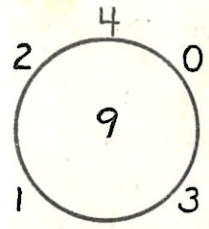
Multiply each number in row C above by 6, and add 1. By 6, and add 5. By 6, and add 3. By 6, and add 4. By 6, and add 2.

D: 4 5 6 7 8 9

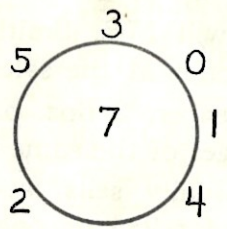
E. 30 31 32 33 34 35 36 37 38 39

Divide each number in row E by each number in row D. Give the quotient and remainder, if any.

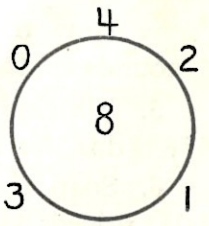
Multiply each number around the circle by the number at the center and add one of the numbers below the circle.



1-2-3-4-5-6-7-8



1-2-3-4-5-6



1-2-3-4-5-6-7

Sales at the Grocery Stores

1. What is the difference between the price of flour at $1.85 a sack and at $1.39 for the same size sack?

2. Grapefruit that usually sell 3 for 25¢ are selling 3 for 19¢ today. How much can Mrs. Smith save on 3 grapefruit?

3. Mrs. Smith buys coffee that usually sells at 37¢ a pound. This week a store is selling that coffee at 29¢ a pound. How much money will Mrs. Smith need to buy 4 pounds of that coffee at the sale?

4. How much will Mrs. Smith save by buying 4 pounds of that coffee at the sale?

5. Which is cheaper, 2 doz. oranges for 96¢, or 47¢ a doz. for oranges of the same size and kind?

***6.** Soap that usually sells for 10¢ a bar is on sale, priced 3 bars for 23¢ at one store, and 75¢ a doz. at another store. Which price is lower?

One-Fourth of a Number

1. Divide 8 apples equally among 4 boys. How many apples does each boy get? $\frac{1}{4}$ of 8 = _____.

2. Divide 20 dolls equally among 4 girls. How many dolls does each girl get? $\frac{1}{4}$ of 20 = _____.

3. Divide 12 pennies equally among 4 girls. How many pennies does each girl get?

4. Draw a square with 2-inch sides. Divide the square into quarters. In each quarter of the square draw a picture of $\frac{1}{4}$ of 12 cookies. Does your answer check?

	a	b	c	d
5.	$\frac{1}{4}$ of 28 =	$\frac{1}{4}$ of 16 =	$\frac{1}{4}$ of 8 =	$\frac{1}{4}$ of 20 =
6.	$\frac{1}{4}$ of 12 =	$\frac{1}{4}$ of 32 =	$\frac{1}{4}$ of 24 =	$\frac{1}{4}$ of 36 =

7. $\frac{1}{4}$ of a dozen = _____ **8.** $\frac{1}{4}$ of a foot = ___ in.

9. $\frac{1}{4}$ of a yard = ___ in. **10.** $\frac{1}{4}$ of a dollar = ___ ¢

11. $\frac{1}{4}$ of a gallon = ___ qt. **12.** $\frac{1}{4}$ of a peck = ___ qt.

To find $\frac{1}{4}$ of a number, divide the number by 4.

Test and Practice: Multiplication and Division

First work the test examples in each row, and check your answers. If you make a mistake, you need more practice. Correct the mistake; then work the practice examples in that row.

Multiplication

	Test			Practice			
	a	b	c	d	e	f	g
1.	32 × 3	42 × 2	20 × 4	13 × 2	30 × 3	24 × 2	10 × 4
2.	64 × 2	73 × 3	81 × 4	92 × 2	72 × 4	61 × 3	71 × 5
3.	123 × 3	340 × 2	713 × 5	201 × 4	423 × 2	320 × 3	316 × 4
4.	75 × 3	67 × 5	94 × 4	56 × 2	64 × 5	39 × 4	46 × 6

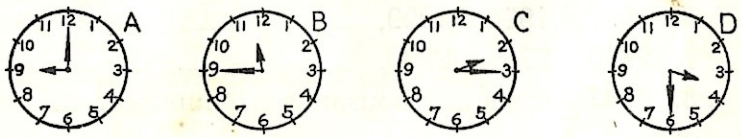
Division

5.	2)846	3)963	4)480	5)550	3)633	2)428	4)840
6.	5)155	4)248	3)189	2)128	3)216	5)355	6)366
7.	2)49	3)98	6)67	4)85	7)79	8)89	3)95
8.	3)906	4)280	5)307	2)408	3)690	4)207	6)300

Problems Using Measure

About how long do you think each of these lines is?

1. A _____
   B _____
   C _____
   D _____
2. Measure to see if your answers were right.
3. On your paper draw a line which you think is 5 in. long. Then with your ruler draw under the first line another line just 5 in. long. Is your first line exactly the same length? Which line is more accurate?
4. Use your ruler to draw on your paper lines of:
   a. 2 in. **c.** $3\frac{1}{2}$ in. **e.** $1\frac{1}{2}$ in.
   b. $4\frac{1}{2}$ in. **d.** 6 in. **f.** $5\frac{1}{2}$ in.
5. Which line drawn is the longest? the shortest?
6. **a.** Clock A below shows _____ o'clock.
   b. Clock B shows that it is _____ minutes, or a _____ to _____.
   c. It is _____ minutes or a _____ past _____ by Clock C.
   d. Clock D shows _____ _____ _____.



7. How long will it take the minute hand to go from quarter to three to half past three?
8. There are _____ inches in a foot.
9. There are _____ inches in a yard.
10. How many feet are there in a yard?

Reading Four-Figure Numbers

Edna and Fred went with their father and mother to an automobile show. There they saw many cars at different prices.

1. A gray car had a tag with $2000 on it.

2. The tag on one of the black cars showed $1700.

3. On another black car, the tag showed $1250.

4. Gloria and Mike also saw these prices:

$1275 $1060 $508 $1505

They could read the prices. See if you can. Tell what numbers belong in the blank spaces below:

5. 900, 1000, 1100, ____, ____, ____, ____.

6. 1997, 1998, 1999, ____, ____, ____, ____.

7. 2600, 2700, 2800, ____, ____, ____, ____.

8. 4687 means __ thousands __ hundreds __ tens __ ones.

9. 7108 means __ thousands __ hundreds __ tens __ ones.

10. Which number below is the largest? the smallest?

863 8001 3628 999 5978 1001

Zeros in Division

Martha, Eva, and Gertrude bought a bag of gum drops together. They counted the gum drops and found there were 31. What was each girl's share?

$$\begin{array}{r} 1 \\ 3\overline{)31} \\ 3 \\ \hline 10 \\ 3\overline{)31} \\ 3 \\ \hline 1 \\ 0 \\ \hline 1 \end{array}$$

Divide: 3 in 3, once. Write the quotient 1 above the 3.

Multiply: $1 \times 3 = 3$. Write 3 below the 3.

Subtract: 3 from 3 is 0. You need not write the 0.

Bring Down: The 1 has not been divided, so bring down the 1.

Divide: 3 in 1, 0. Write the quotient 0 above the 1.

Multiply: $0 \times 3 = 0$. Write 0 below the 1.

Subtract: 0 from 1 is 1.

Compare: The 1 that is left over is smaller than 3, so 1 is the remainder.

Each share is 10, and 1 is left over.

Check:

$$\begin{array}{r} 10 \\ \times 3 \\ \hline 30 \\ +1 \\ \hline 31 \end{array}$$

Is each answer below correct?

$10 \text{ r}2$ in $4\overline{)42}$ $\quad$ $20 \text{ r}3$ in $6\overline{)123}$ $\quad$ $20 \text{ r}4$ in $5\overline{)104}$ $\quad$ $30 \text{ r}5$ in $7\overline{)215}$

Finish these divisions and check:

	a	b	c	d	e	f
	1	6	4	3	101 r	10
1.	$8\overline{)87}$	$5\overline{)300}$	$7\overline{)285}$	$9\overline{)276}$	$6\overline{)608}$	$7\overline{)705}$

Divide and check:

2.	$8\overline{)85}$	$3\overline{)62}$	$3\overline{)121}$	$9\overline{)365}$	$2\overline{)841}$	$4\overline{)483}$
3.	$5\overline{)505}$	$5\overline{)500}$	$7\overline{)140}$	$6\overline{)242}$	$3\overline{)152}$	$4\overline{)120}$

Problems Using Zero

1. There are 360 eggs in a large case. If Mrs. Cobb, Mrs. Law, and Mrs. Guy divide a case equally among them, how many eggs should each get?

2. Mr. Arnold, Mr. Cobb, Mr. Napp, and Mr. Row together bought a box of 200 oranges. The oranges are to be divided equally among them. How many oranges should each get?

3. If a bag of sugar that weighs 100 pounds is divided equally among 5 women, how many pounds should each get?

4. A sack of potatoes that weighs 150 pounds is to be divided equally among 5 families. What is each family's share?

5. Sam wants to buy $\frac{1}{2}$ of 408 marbles that Ned has. How many marbles would Ned have left?

6. The dining room furniture for Joan's doll house will cost 70¢; the kitchen furniture, 50¢; the bed room furniture, 40¢; and the living room furniture, 60¢. How much money does Joan need to buy all this furniture?

7. Joan has saved $4. How much would she have left if she bought all the doll furniture that she needs for her doll house? (See problem 6.)

8. Four boys plan to buy a $3.60 football and to share the cost equally. How much will each boy's share be?

9. Mr. Smith told Frank's father, "I'll sell the car for $350. You may pay me the same amount each month and take 5 months to pay for it." How much would Frank's father have to pay each month?

Division Test

This test will show whether or not you have learned how to work the different kinds of division examples that you have studied.

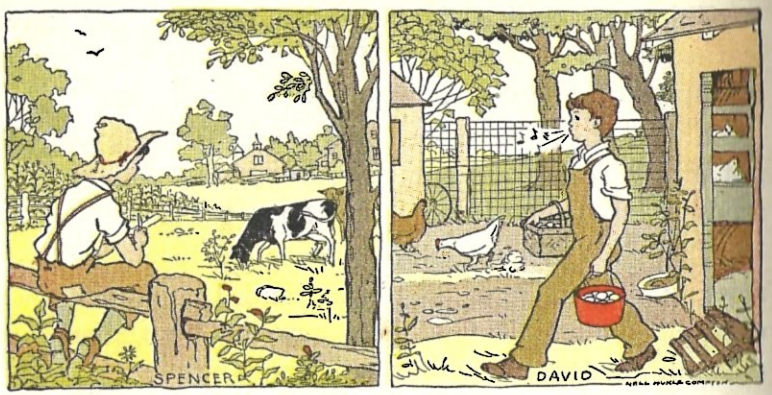
If you make mistakes in the first 6 rows, you do not know some of your division facts. You should study again the ones that you do not know.

There is only one kind of example in each of the rows numbered 7, 8, 9, 10, 11, and 12. Check each example by multiplying the quotient by the divisor and adding the remainder if there is any.

If you make any mistakes, correct them.

	a	b	c	d	e	f
1.	4)32	7)35	3)27	6)24	4)36	5)30
2.	9)36	4)28	8)24	5)25	3)18	4)12
3.	4)24	6)12	7)21	2)18	9)27	3)24
4.	5)35	7)14	4)16	8)32	3)21	5)15
5.	6)18	3)12	6)30	3)15	5)20	2)12
6.	2)14	9)18	4)20	7)28	8)16	6)36
7.	2)48	3)69	5)555	4)848	3)396	2)264
8.	9)909	4)804	3)309	2)840	5)505	2)602
9.	5)355	8)328	6)366	9)279	4)288	7)357
10.	4)169	7)218	3)277	6)128	8)329	5)258
11.	3)$6.93	6)$12.66	4)$8.48	2)$4.86	5)$10.50	7)$14.07
12.	4)323	7)214	2)165	5)302	6)365	9)274

Earning Money for a Trip



Spencer and David live on a farm. They earned and saved money for a trip to the city.

1. Spencer earned $1.85 driving the hay rake, and $.75 watching cows for a neighbor. His mother then gave him $1.42, which was his share of the vegetable money. How much did he earn altogether?

2. David earned $1.50 bringing in the cows; $1.28 was his share of the egg money; and his aunt gave him $1.25 for going on errands. In all he earned how much for the trip to the city?

3. Which boy earned more money? how much?

4. How much did the boys earn together?

5. Spencer said, "I wish I had earned five times as much." How much would he have earned?

6. David said, "I wish I had three times as much!" Did he wish for more or less than Spencer? How much more or how much less?

The Trip to the City

1. The boys' father told them that a ride to the city on the railroad costs $1.20 for a grown person, but that children under 12 years can ride for half fare. Spencer is 11 and David is 9 years old. How much would each have to pay for a ticket one way?

2. How much would both half-fare tickets to the city cost?

If the boys pay at the same time for both the ride to the city and the ride home, they get a round-trip ticket. The price of a round-trip ticket is $1.00.

3. How much must the 2 boys pay for round-trip tickets?

***4.** How much can each boy save by buying a round-trip ticket? How much can both save?

The boys bought round-trip tickets.

On the way home they checked up:

5. Each had spent $.25 for a show; $.15 for ice cream; $.10 for candy; and $.20 for a ride on a bus. How much had each spent for these things?

***6.** David had also spent 25¢ for presents and 75¢ for a baseball mitt. How much should he have had left?

***7.** Spencer had also spent $.75 for a baseball, $.40 for presents, and he had $1.17 left. Did his money check?

***8.** At a bicycle shop in the city, used bicycles for boys were on sale. How much more would the boys each have to save to buy himself one of the bicycles marked $10?

Checking Up on Multiplication by Four

Give the products of the examples below:

0	1	2	3	4	5	6	7	8	9
4	4	4	4	4	4	4	4	4	4

Study again any multiplication fact above that you do not know. You will need to use it often.

Work the test examples in each row below. Cover your work and multiply again to check.

If you make a mistake, correct it, and then work the practice examples in that row.

	Test		Practice		
	a	b	c	d	e
1.	122 × 4	322 × 4	212 × 4	221 × 4	621 × 4
2.	210 × 4	420 × 4	120 × 4	220 × 4	810 × 4
3.	46 × 4	37 × 4	28 × 4	39 × 4	35 × 4
4.	408 × 4	207 × 4	209 × 4	607 × 4	805 × 4
5.	816 × 4	917 × 4	618 × 4	716 × 4	824 × 4
6.	77 × 4	65 × 4	88 × 4	96 × 4	57 × 4
7.	\$3.17 × 4	\$4.06 × 4	\$7.08 × 4	\$3.15 × 4	\$3.16 × 4

Checking Up on Division by Four

You have studied all the division facts with 4. Give quickly the quotients of the examples below:

$4\overline{)0}$ $4\overline{)4}$ $4\overline{)8}$ $4\overline{)12}$ $4\overline{)16}$ $4\overline{)20}$ $4\overline{)24}$ $4\overline{)28}$ $4\overline{)32}$ $4\overline{)36}$

Study again any division fact above that you do not know. You will need to use it often.

Work the test examples in each row below. If you make a mistake in any row, correct your mistake, and then work the practice examples in that row.

	Test		Practice		
	a	b	c	d	e
1.	$4\overline{)848}$	$4\overline{)488}$	$4\overline{)888}$	$4\overline{)884}$	$4\overline{)484}$
2.	$4\overline{)480}$	$4\overline{)404}$	$4\overline{)840}$	$4\overline{)880}$	$4\overline{)408}$
3.	$4\overline{)368}$	$4\overline{)284}$	$4\overline{)168}$	$4\overline{)244}$	$4\overline{)328}$
4.	$4\overline{)\$12.48}$	$4\overline{)\$16.84}$	$4\overline{)\$20.40}$	$4\overline{)\$32.80}$	$4\overline{)\$24.48}$
5.	$4\overline{)245}$	$4\overline{)327}$	$4\overline{)369}$	$4\overline{)286}$	$4\overline{)207}$
6.	$4\overline{)361}$	$4\overline{)283}$	$4\overline{)242}$	$4\overline{)323}$	$4\overline{)162}$
7.	$\frac{1}{4}$ of 16	$\frac{1}{4}$ of 32	$\frac{1}{4}$ of 24	$\frac{1}{4}$ of 36	$\frac{1}{4}$ of 20

Problem Progress Test

(Time, 30 minutes)

1. Edna ran errands to earn money. Monday she earned 10¢; Tuesday, 18¢; Wednesday, 23¢; Friday, 9¢; and Saturday, 47¢. How much did she earn?

2. On each page of Kathleen's picture book, she can paste 6 little pictures. There are 56 pages in her book. How many pictures will it hold?

3. Jack's new stamp book will hold just 1000 stamps. Jack has 693 stamps now. How many more stamps will fill his new stamp book?

4. Billie, Bob, and Jim together earned $3.69 picking berries for Mr. Smith. They divided the money equally. How much did each boy get?

5. Nancy wants to take swimming lessons. Each lesson will cost 75¢. How much would she have to pay for 5 swimming lessons?

6. As we were leaving for our home, Grandfather gave us some eggs to take back to town. He said, "This case holds 360 eggs. Keep $\frac{1}{4}$ of the eggs, and give Mary, Agnes, and Jean each an equal share." How many eggs should we keep?

7. David took his wagon to the store to get a bushel of potatoes. The man at the store said, "Just take enough of those peck sacks of potatoes to make a bushel, David." How many peck sacks should David take?

Standards

Excellent	Good	Fair	Poor
7 right	5 or 6 right	3 or 4 right	1 or 2 right

The 100 Addition Facts

0 0 0	1 0 1	2 0 2	3 0 3	4 0 4	5 0 5	6 0 6	7 0 7	8 0 8	9 0 9
0 1 1	1 1 2	2 1 3	3 1 4	4 1 5	5 1 6	6 1 7	7 1 8	8 1 9	9 1 10
0 2 2	1 2 3	2 2 4	3 2 5	4 2 6	5 2 7	6 2 8	7 2 9	8 2 10	9 2 11
0 3 3	1 3 4	2 3 5	3 3 6	4 3 7	5 3 8	6 3 9	7 3 10	8 3 11	9 3 12
0 4 4	1 4 5	2 4 6	3 4 7	4 4 8	5 4 9	6 4 10	7 4 11	8 4 12	9 4 13
0 5 5	1 5 6	2 5 7	3 5 8	4 5 9	5 5 10	6 5 11	7 5 12	8 5 13	9 5 14
0 6 6	1 6 7	2 6 8	3 6 9	4 6 10	5 6 11	6 6 12	7 6 13	8 6 14	9 6 15
0 7 7	1 7 8	2 7 9	3 7 10	4 7 11	5 7 12	6 7 13	7 7 14	8 7 15	9 7 16
0 8 8	1 8 9	2 8 10	3 8 11	4 8 12	5 8 13	6 8 14	7 8 15	8 8 16	9 8 17
0 9 9	1 9 10	2 9 11	3 9 12	4 9 13	5 9 14	6 9 15	7 9 16	8 9 17	9 9 18

The 100 Subtraction Facts

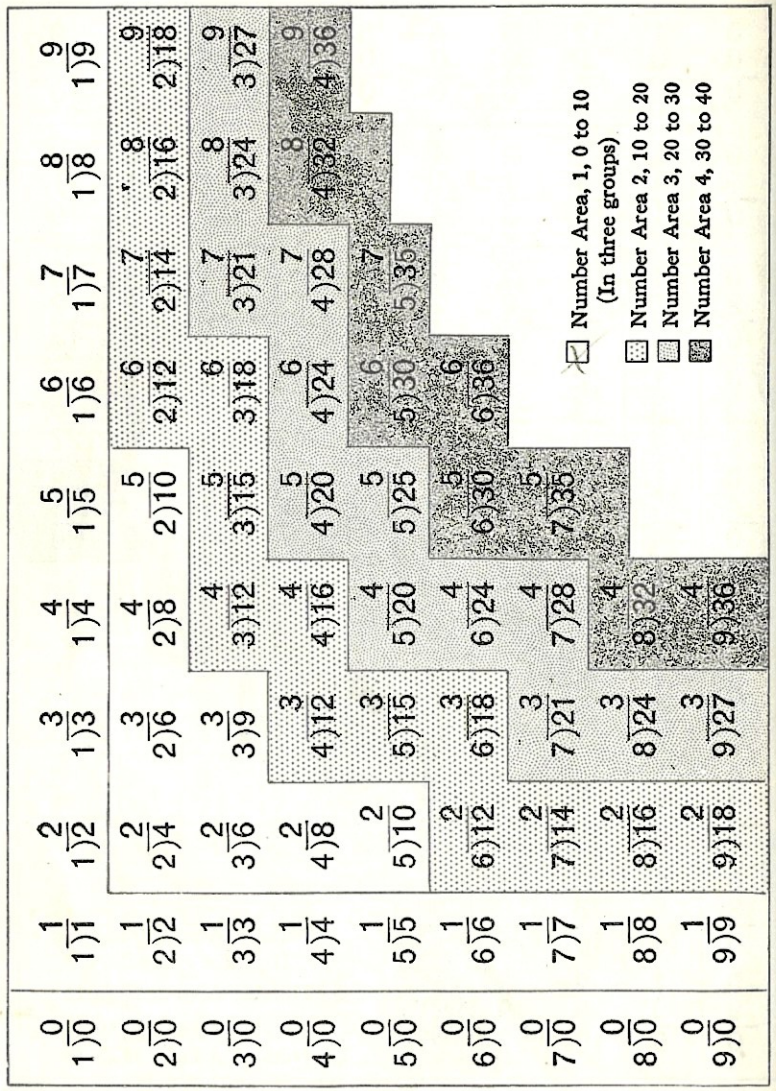
0 0 0	1 0 1	2 0 2	3 0 3	4 0 4	5 0 5	6 0 6	7 0 7	8 0 8	9 0 9
1 1 0	2 1 1	3 1 2	4 1 3	5 1 4	6 1 5	7 1 6	8 1 7	9 1 8	10 1 9
2 2 0	3 2 1	4 2 2	5 2 3	6 2 4	7 2 5	8 2 6	9 2 7	10 2 8	11 2 9
3 3 0	4 3 1	5 3 2	6 3 3	7 3 4	8 3 5	9 3 6	10 3 7	11 3 8	12 3 9
4 4 0	5 4 1	6 4 2	7 4 3	8 4 4	9 4 5	10 4 6	11 4 7	12 4 8	13 4 9
5 5 0	6 5 1	7 5 2	8 5 3	9 5 4	10 5 5	11 5 6	12 5 7	13 5 8	14 5 9
6 6 0	7 6 1	8 6 2	9 6 3	10 6 4	11 6 5	12 6 6	13 6 7	14 6 8	15 6 9
7 7 0	8 7 1	9 7 2	10 7 3	11 7 4	12 7 5	13 7 6	14 7 7	15 7 8	16 7 9
8 8 0	9 8 1	10 8 2	11 8 3	12 8 4	13 8 5	14 8 6	15 8 7	16 8 8	17 8 9
9 9 0	10 9 1	11 9 2	12 9 3	13 9 4	14 9 5	15 9 6	16 9 7	17 9 8	18 9 9

Multiplication Facts: Products to 40

0 0 0	1 0 0	2 0 0	3 0 0	4 0 0	5 0 0	6 0 0	7 0 0	8 0 0	9 0 0
0 1 0	1 1 1	2 1 2	3 1 3	4 1 4	5 1 5	6 1 6	7 1 7	8 1 8	9 1 9
0 2 0	1 2 2	2 2 4	3 2 6	4 2 8	5 2 10	6 2 12	7 2 14	8 2 16	9 2 18
0 3 0	1 3 3	2 3 6	3 3 9	4 3 12	5 3 15	6 3 18	7 3 21	8 3 24	9 3 27
0 4 0	1 4 4	2 4 8	3 4 12	4 4 16	5 4 20	6 4 24	7 4 28	8 4 32	9 4 36
0 5 0	1 5 5	2 5 10	3 5 15	4 5 20	5 5 25	6 5 30	7 5 35		
0 6 0	1 6 6	2 6 12	3 6 18	4 6 24	5 6 30	6 6 36			
0 7 0	1 7 7	2 7 14	3 7 21	4 7 28	5 7 35				
0 8 0	1 8 8	2 8 16	3 8 24	4 8 32					
0 9 0	1 9 9	2 9 18	3 9 27	4 9 36					

Number Area 1, 0 to 10
(In three groups)
Number Area 2, 10 to 20
Number Area 3, 20 to 30
Number Area 4, 30 to 40

Division Facts: Dividends to 40



Index

(Page numbers are given)

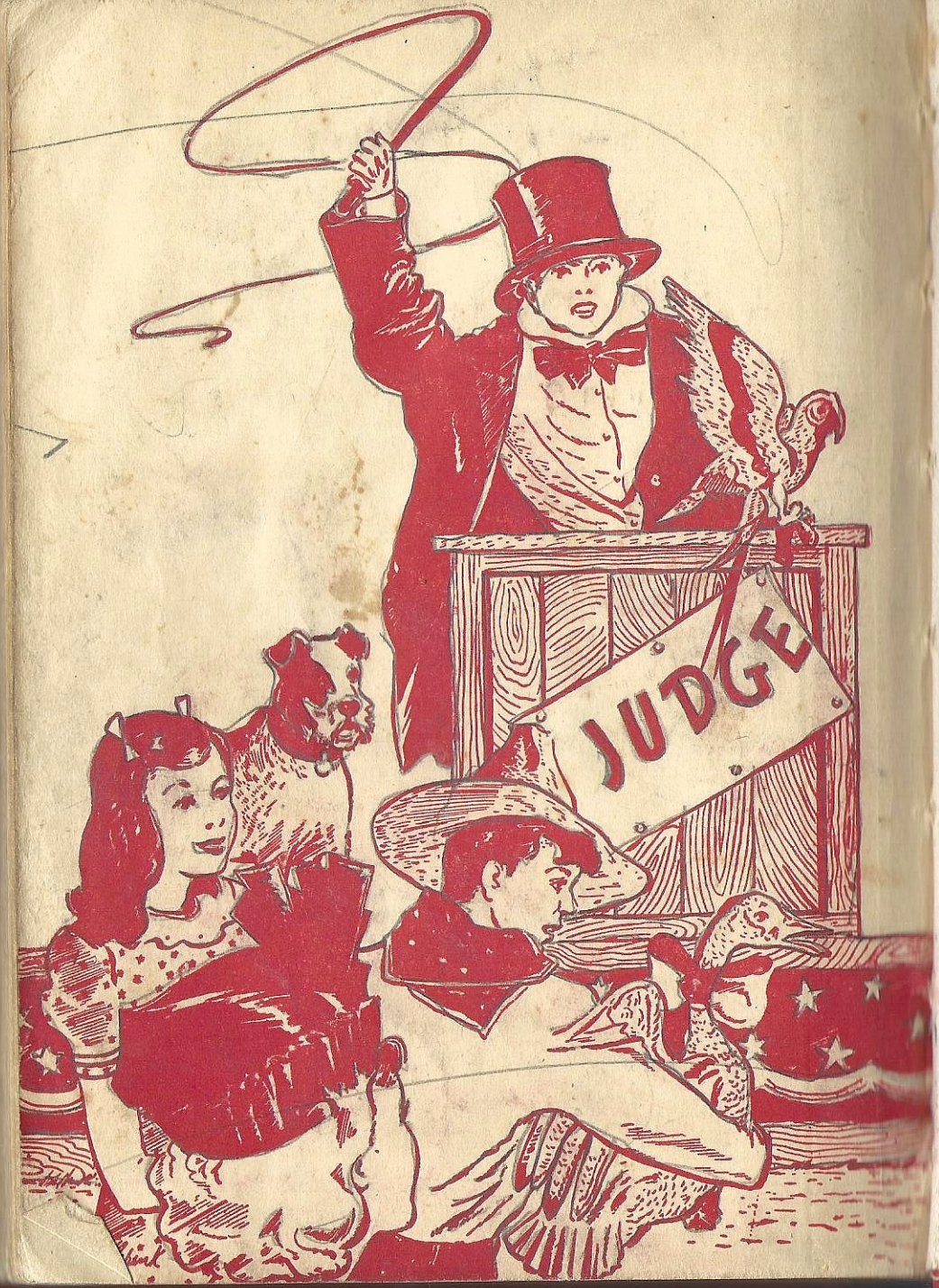
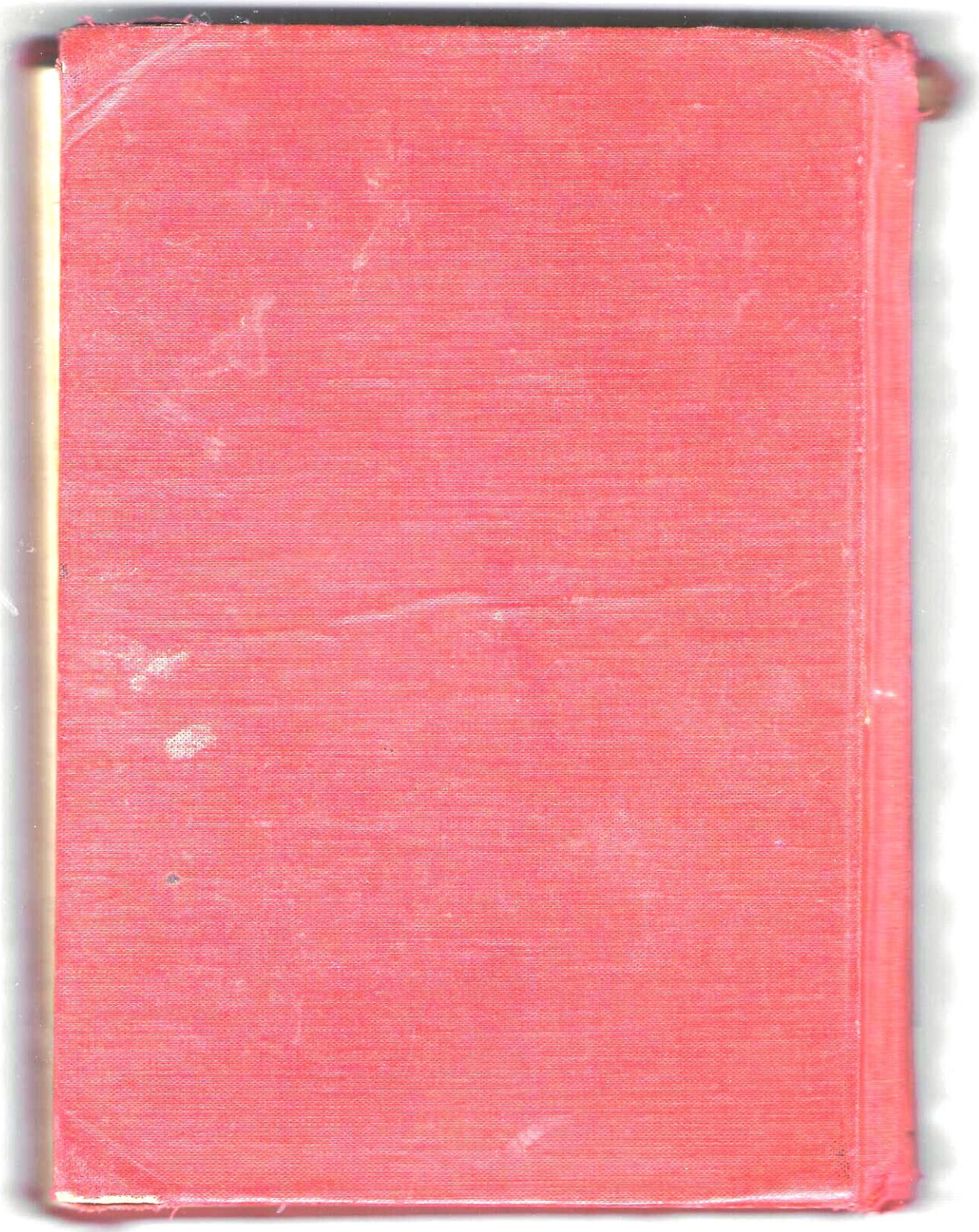
Abbreviations. *See the word.*
Addition,
  carrying 86, 88, 108
  charts 8, 14, 16, 18, 22, 24
    See also Tables.
  checking in 31
  column, *See* Column addition.
  diagnostic practice 66, 103, 152
  facts 12, 14, 18, 22, 24, 36, 253
  families in 76, 77, 81, 89
  game 93
  higher decade 79, 83, 84, 91
  meaning of 14
  of dollars and cents 111
  of 2-figure numbers 29
  of 3-figure numbers 106
  remedial practice 14
  test and practice 103, 152, 212
  tests 12, 13, 36, 37, 60, 134, 180, 250
  to products 197
  using silent-helpers 15
Addresses, reading and writing . . 69
Annex, meaning of 165
Autumn 21
Banking, school 56, 92
Borrowing, in subtraction . . 120, 125, 128
Bushel 236
Calendar 21
Carrying,
  in addition 86, 88, 108
  in multiplication 195, 201
Cents,
  and dollars. *See* Dollars and cents.
  divided by cents 235
  point 9
  sign 9
Change, making 119
Charts,
  addition 14, 16, 18, 22, 24
  division 156, 160, 175, 187, 205, 206, 229
  higher decade addition 79, 83, 84, 91
  money 8
Charts—(continued)
  multiplication . . 144, 157, 163, 167, 198, 226
  number 5
  subtraction 40, 41, 43, 44, 46
  uneven division facts 220
Checking,
  addition 31
  multiplication 169, 195
  short division 184
  short division with remainders 221
  subtraction 50
Checking up,
  on division 189, 210, 240, 249
  on multiplication 172, 173, 209, 228, 240, 248
Circle 63
Clocks 6, 7
Coins 8
Column addition,
  broken columns 70
  1-figure numbers 30–32, 81
  2-figure numbers 34
  using number families in 76–81
Columns,
  writing numbers in 81
Comparing,
  in division 216, 219, 222
  in subtraction 41
  prices 238
Counting,
  by hundreds 5
  by tens 5
  by thousands 68
  by twos 4
Dates,
  reading and writing 69
Day 21
Decades, meaning of 89
Diagnostic-inventory tests,
  addition, keyed 12, 13
  subtraction, keyed 38, 39
Diagnostic practice,
  addition 66, 103, 152, 212

Diagnostic practice—(continued)
multiplication 172, 173, 209, 228, 240
short division 189, 210, 240
subtraction 66, 114, 152, 212
Diagnostic test,
short division 245
Difference,
finding, in subtraction 43
meaning of 40
Dime 8
Dividend 189, 220
Division,
charts 156, 160, 175, 187, 205, 220, 229
facts 156, 160, 175, 187, 205, 220, 229, 256
meaning of 154, 155
multiplication in 156
short. *See* Short Division.
sign 154
silent-helpers for 156
subtraction for 217
ways of writing 154
Divisor 189, 220
comparing remainder to 216
Dollars,
equivalents of 8
reading and writing 8
sign of 8
Dollars and cents,
adding 111
division of 232
in multiplication 196
reading and writing 9
subtracting 117
Dozens 22, 105
Dry measure, table 240
Equal sign 16
Exchanging multiplier and multiplicand 142
Extended product, in multiplication 169
Facts,
addition . 12, 14, 18, 22, 24, 36, 253
division . 156, 160, 175, 205, 229, 256
multiplication . . 140, 144, 157, 163, 167, 198, 226, 255
multiplication, checking up on . 228
number, how to study 19
simple, used in multiplication . 84, 95
subtraction 38, 40, 41, 43, 44, 46, 52, 254
uneven division 220
Families, number 76, 77
using in addition 81, 89
using in harder column addition 78–82
using in subtraction 218, 219
Feet 62, 64, 97
Figures, the 5
Finding difference, in subtraction, meaning 43
Flash-card test 172, 217
Fourths 59
of a number 239
of a unit 59, 85
Fractional parts of a number . . . 159
fourths 239
halves 189
thirds 207
Fractional parts of a unit 58, 59
fourths 59, 85
halves 58, 85
thirds 85
Gallon 234
Games,
addition 93
matching 67
multiplication 145, 228
number 98, 101
Half dollar 8
Halves 58
of a number 159, 189
of a unit 58, 85
Hands of a clock 6, 7
Height, measuring 97, 129
Higher decade addition charts 79, 83, 84, 91
Hours 6, 7
How many more are needed, in subtraction 44
Hundreds,
borrowing from in subtraction 125, 128
counting by 5
Inches 62–65, 97
Inventory tests,
addition 12, 13
subtraction 38, 39
Keyed tests,
addition 12, 13
subtraction 38, 39
Large numbers,
division of 184
multiplication of 161
reading 242
reading and writing 68, 69

Length, measuring 62–65
Linear measure 63, 64, 97, 129
Liquid measure, table 234
Making change 119
Mastery tests,
addition 36, 37, 60, 134, 250
multiplication 172, 173, 190, 209, 228, 251
problems 61, 135, 191, 252
short division . . . 189, 190, 210, 251
subtraction 52, 53, 60, 134, 250
Matching tests 67
Meaning of,
addition 14
annex 165
comparing in subtraction 41
decades 89
difference 40
division 154, 155
finding difference in subtraction 43
how many more are needed, in subtraction 44
multiplication 139
subtraction 40
times 139
zero 16
Measures,
dry, table 236
linear 63, 65, 97, 129
liquid, table 234
of weight 223
review 137
Measuring,
height 97, 129
length 62–65
Minus sign 41
Minutes 6, 7
Mixed test 225
Money. *See also* Dollars and Cents.
chart 8
paper 8
Months 21, 69
Multiplicand,
and multiplier, exchanging . . . 142
zero in 203
Multiplication,
carrying in 195, 201
charts 144, 157, 163, 167, 198, 226
checking 169, 195
checking up on 172, 173, 209, 228, 248
Multiplication—(continued)
diagnostic practice . . 172, 173, 209, 228
dollars and cents in 196
extended product 169
facts 140, 144, 157, 163, 167, 198, 226, 255
games 145, 228
in division 156
introducing 138
meaning of 139
of larger numbers 161
of 3-figure numbers 171
of whole number by 10 165
sign of 139
simple facts used in 84, 95
test and practice 173, 209, 240
tests . . . 172, 173, 190, 209, 228, 251
zero in 163, 164, 203
Multiplied by, or times 145
Multiplier and multiplicand, exchanging 142
Nickel 8
Number,
chart 5
counting 4
facts, how to study 19
families. *See* Families.
games 98, 101, 145
scale 89
stories. *See* Problems.
Numbers,
fractional parts. *See* Fractional parts.
large. *See* Large numbers.
reading and writing 5, 68, 69
Roman 136
sequence of 4, 11
telephone 3, 69
3-figure. *See* Three-figure numbers.
2-figure. *See* Two-figure numbers.
uses of 10, 69
whole, multiplied by 10 165
writing, in columns 81
Numerals. *See* Numbers.
Ounces 223
Paper money 8
Pecks 236
Pints 27, 234, 236
Plus sign 15
Point, cents 9
Pounds 105, 223

Prices, comparing 238
Problems,
help in working 71, 73, 141
mastery tests 61, 135, 191, 252
tests 61, 135, 153, 191, 252
Product 140
adding to 197
extended, in multiplication ... 169
Progress tests,
addition 60, 134, 250
multiplication 190, 251
problems 61, 135, 191, 252
short division 190, 251
subtraction 60, 134, 250
Quarter 8
Quarts 27, 234, 236
Quotient 156, 189, 222
Reading numbers 68, 69, 242
Reading and writing,
addresses, dates 69
dollars and cents 8, 9
large numbers 68
numbers 5
Remedial practice,
addition 14–36
subtraction 40–51
Roman numbers, using 136
Ruler 63
Scale, number 89
School banking 56, 92
Seasons 21
Sequence of numbers 4, 11
Short division,
comparing in 216, 219, 222
checking 184, 221
checking up on 189, 210, 249
diagnostic practice ... 189, 210, 249
new step in 193
of cents by cents 235
of dollars and cents 232
of large numbers 184
tests 189, 190, 210, 245, 251
test and practice 210, 240, 249
with remainder 216, 220–222
zeros in 187, 188, 243
Signs,
cents 9
division 154
dollar 8
equal 16
minus 41
multiplication 139
plus 15
times 139
Silent-helpers,
for addition 15
for division 156
for multiplication 144
for subtraction 40
how to use 15, 19
review with 19, 112, 177, 217
how to test with 15
Spring 21
Square 63
Standardized tests. *See* Progress tests.
Subtraction,
borrowing in 120, 125, 128
charts 40, 41, 43, 44, 46
checking 50
comparing, meaning of 41
diagnostic practice 66, 114
facts 38, 40, 41, 43, 44, 46, 52, 254
finding difference, meaning of. 43
for division 217
how many more are needed .. 44
meaning of 40
of dollars and cents 117
of 3-figure numbers 115
of 2-figure numbers 50
test and practice 114, 152, 195, 212
tests 38, 39, 52, 53, 60, 134, 181, 250
timed practice 114
using families in 218, 219
using silent-helpers in 40
using to find remainder 219
zero in upper number 123, 130
Sum 14
Summer 21
Tables. *See also* Charts.
liquid measure 234
dry measure 236
Telephone,
numbers 3, 69
using 3
Telling time 6, 7
Ten,
multiplying whole number by . 165
counting by 5
Tens' place,
borrowing from in subtraction. 128
carrying from (+) 108
Test and practice,
addition 103, 152, 212, 240
multiplication 173, 209, 240, 248
short division 210, 249
subtraction 114, 152, 212

Tests,
addition .. 12, 36, 60, 134, 180, 250
flash card 172, 217
mastery 36, 52, 103, 172, 189, 209
matching 67
mixed 225
multiplication 190, 251
problems 61, 135, 153, 191, 252
short division 190, 245, 251
subtraction 38, 39, 52, 53, 60, 134, 181, 250
timed. *See* Timed tests.
with silent-helpers 15
Thirds,
of a number 207
of a unit 85
Thousands, counting by 68
Time,
telling 6, 7, 211
writing 6, 7
Timed practice, subtraction 114
Timed tests,
addition 12, 13, 36, 37, 60, 134, 250
multiplication 190, 251
problems 61, 135, 191, 252
short division 190, 251
subtraction 38, 40, 60, 134, 181, 250
Times,
meaning of 139
or multiplied by 145
sign 139
Three-figure numbers,
adding 106
multiplying 171
subtracting 115
Triangle 63
Two-figure numbers,
adding 29, 34, 35
multiplying 161, 165, 169
subtracting 50
Unit, fractional parts of a .. 58, 59, 85
Unit pages,
Number, please 3
Choosing a captain 11
A food sale 20
Circus day 26
A picnic at the lake 23
Candy sale at school 47
Canning fruit 54
Jim's birthday party 55
Today is bank day 56
Jane's doll house 62
Candy and toy shop 74
The lunch room 75
Unit Pages—(continued)
Nancy's chickens 82
Dan's vacation 90
Money in the bank 92
The lions race the tigers 93
A school party 94
Helping in a toy shop 95
Spin the wheel 101
At the grocery 105
The school fair 116
A garden 122
Shopping for mother 127
At the bakery 132
Buying stamps 138
Getting ready for Ted's party . 146
Fun at the party 147
A day at the fair 151
At the fruit store 158
Tulip time 166
An auto trip 170
A flower show 178
A school party 179
Children's books 192
At a roadside stand 199
A candy sale 200
Nature problems 206
Making a wooden zoo *214
Polly Prim doll laundry 215
Decorating the Christmas tree 226
Costumes for a play 230
Buying milk at school 235
At the grocery store 238
Earning money for a trip 246
The trip to the city 247
U. S. money. *See* Money *and* Dollars and Cents.
Weight, measures of 223
Winter 21
Writing. *See also* Reading and Writing.
division examples 154
numbers in columns 31, 81
time 6, 7
Yard 63
Yardstick 62
Zero,
facts 16, 41, 163, 187
in addition 16
in division 187, 188, 243
in multiplication 163, 164, 203
in upper number in subtraction 123, 130
meaning of 16
uses of 186, 187



Dare Boys Inc
320. East Washington Ave.
Montgomery Ala.
Phone 3-2020